

OWNER'S MANUAL

420





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Section 1

Introduction

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Section 1

WELCOME ABOARD!!

Welcome to the **Cruisers Yachts** family of happy yacht owners.

We wish to thank you for making our **420 Express Series** your recreational choice for boating enjoyment. Extensive design and engineering research went into the development of all **Cruisers Yachts**. We feel there is a beautiful balance between structural integrity and creature comforts.

Your yacht was manufactured by trained craftsmen in the tradition of meeting or exceeding existing safety and quality standards established by the United States Coast Guard and the Boating Industry of America.

Cruisers Yachts has been manufacturing boats for over 50 years. We take pride in our craftsmanship and hull performance. We are confident you will enjoy the ride. For you, the **Cruisers Yachts** name is your assurance that your yacht will hold its value while providing many years of boating pleasure. We have made a commitment to this industry and are glad to have you as a partner.

Congratulations on your choice -- let us know if we can be of further service.

SKIPPER'S KIT

The Skipper's Kit contains the **420 Express Series** owner's manual. Also included is information about onboard systems and components furnished by suppliers other than Cruisers Yachts.

Owner's Manual

The owner's manual contains specific information concerning the operation of the **420 Express Series**. The descriptions contained within this manual will introduce you to features of the **420 Express Series**, and provide you with a general knowledge of how the equipment works. This manual is divided into several sections, and each section is introduced by a table of contents to help you quickly find needed information.

The Getting Started owner's manual contains additional general information concerning operation and the necessary information for boating safely and care of your yacht. The **Getting Started** manual is also divided in the same manner as the owner's manual, to help you quickly find needed information. Become familiar with the material in each section of both manuals. Always keep both manuals together and with your yacht for future use, and for anyone who may operate your yacht. The following are the topics found in the **Getting Started** manual:

INTRODUCTION
BOATING SAFETY
GENERAL CONTROLS AND INDICATORS
BASIC OPERATION OF SYSTEMS
GENERAL ACCESSORY ITEMS
GETTING UNDERWAY
GENERAL MAINTENANCE
STORAGE AND EXTENDED LAY-UP
TROUBLESHOOTING



Safety Symbols



The Safety Alert Symbol means **ATTENTION! Be alert to the possibility of personal injury or death.**

The following precautions are used throughout this manual.

DANGER

Indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.

WARNING

Indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.

CAUTION

Indicates a potentially hazardous situation, which, if not avoided, may result in minor or moderate injury.

CAUTION

Indicates the presence of a hazard which might result in damage to property or equipment.

The “signal words” of **DANGER**, **WARNING** and **CAUTION** have specific meaning to alert you to relative level of hazard.

Section 1 contains a description of the Skipper's Kit and information about the warranty.

Section 2 contains your yacht specifications such as dimensions and capacities. There are also layout diagrams to introduce you to floorplans as well as the locations of various components.

Section 3 contains descriptions of all the controls and indicators on the dash of the helm.

Section 4 contains principles of operation for the major systems onboard the **420 Express Series**.



Section 1

Owner's Manuals for Onboard Systems and Components

Spend some time becoming familiar with all the information contained in the Skipper's Kit. Besides containing separate warranty information, the kit also contains literature which provides important safety information, operating and maintenance instructions for those systems and components not manufactured by Cruisers Yachts. Depending on the options you chose, the kit may contain some or all of the following literature:

- Engine
- Hydraulic Steering
- RACOR Fuel Filter/Water Separator
- Electric Stove
- Battery Charger
- Water Heater
- Trim Tabs
- Refrigerator/Freezer
- Generator
- Electric Anchor Windlass
- Air Conditioner/Heater
- Stereo System
- Compass
- Microwave
- Marine Toilet
- Fire Suppression System
- Carbon Monoxide (CO) Detector
- Ice Maker
- Propeller Shaft
- Shaft Logs
- Bow Thruster
- Oil Exchange System
- Central Vacuum
- Search Light Operation
- Television, DVD Player, FM Radio
- Coffee Maker
- Telephone Wiring, Jack and Dockside Receptacle

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WARRANTY INFORMATION

Warranties for onboard systems and components furnished by suppliers other than Cruisers Yachts are located inside the Skipper's Kit. Your Cruisers Yachts Dealer will go through these with you. It is your responsibility to fill out any warranty registration that may be required.

The warranty provided by Cruisers Yachts is printed on the last page of this manual. You and the Cruisers Yachts Dealer have certain responsibilities to fulfill to keep the warranty in force.

Dealership Responsibilities

1. The dealer will discuss the terms of all warranties and stress the importance of registering warranties with the appropriate manufacturers.
2. The dealer will provide instruction for obtaining warranty service.
3. The dealer will go over the predelivery service record with you and then sign it to certify that all work has been accomplished.
4. The dealer will provide you with thorough instructions in the operation of your yacht and all its systems.

Your Responsibilities

1. Sit down with the dealer and go over all warranties. Fill in the Cruisers Yachts Limited Warranty Registration card which is located inside the Skipper's Kit. Keep a record of the hull number for future reference.
2. Inspect the boat at the time of delivery to ensure that all systems are operating properly.
3. Sit down with the dealer and go over the predelivery service record. Sign this record to indicate that it has been explained to you.
4. Operate all equipment per the manufacturer's instructions.

5. Cruisers Yachts recommends that you refer to your engine warranty for initial inspection and service requirements.
6. Perform or provide for the appropriate periodic maintenance outlined in the owner's manuals and service guides.

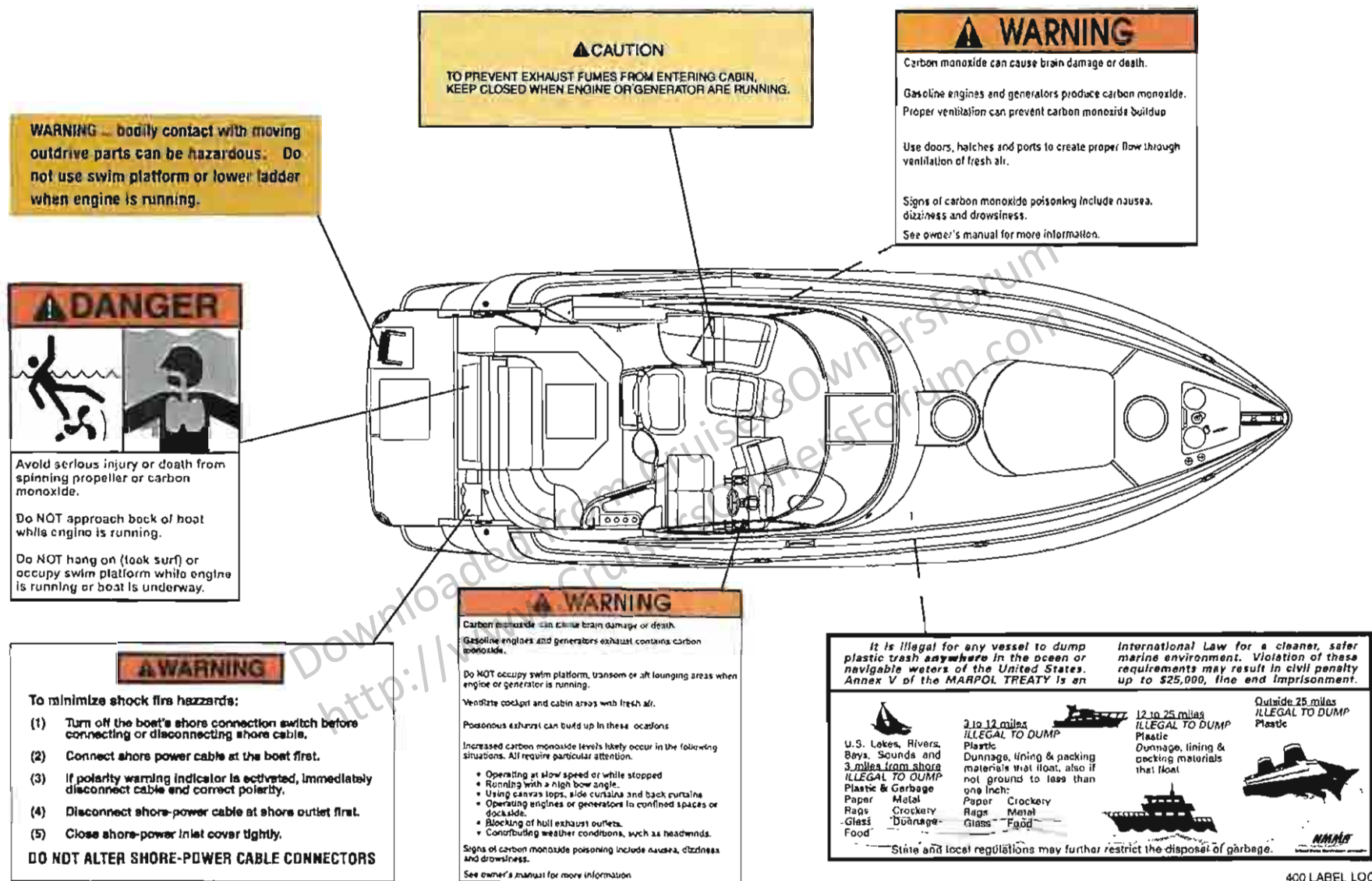
Warranty Service

You are entitled to all the benefits and services set down in the warranties. If a problem arises with your 420 Express Series as a result of workmanship or materials, contact your Cruisers Yachts Dealer as soon as possible. Please have your hull identification number and necessary model numbers on hand for the items that may need service or repair. Your hull identification number is located below the rub rail on the starboard side of the transom.



Section 1

SAFETY LABEL LOCATION LAYOUT



400 LABEL LOC



Section 2

Model Specific Information

| | | | |
|---|------|--|------|
| Specifications..... | 2-3 | Diesel Engine General Layout..... | 2-23 |
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SPECIFICATIONS

| Measurements | (US / Metric) |
|---|------------------------|
| L.O.A. Hull..... | 39'0" / 11.9 m |
| L.O.A. Hull with Integrated Pulpit..... | 43" / 13.1 m |
| Beam | 13'6" / 4.1 m |
| Approximate Weight*, Diesel Engines | 23,500 lbs / 10,659 kg |
| Approximate Weight*, Gas Engines..... | 22,000 lbs / 9,979 kg |
| Fuel Capacity | 300 gal / 1136 L |
| Water System Capacity | 80 gal / 303 L |
| Holding Tank Capacity | 50 gal / 189 L |
| Cabin Headroom (minimum)..... | 6'5" / 2.0 m |
| Height - Keel to Top of Windshield..... | 15'0" / 4.6 m |
| Height - Keel to Top of Arch | 14'5" / 4.4 m |
| Draft | 36" / 91 cm |
| Bridge Clearance with Arch | 11'5" / 3.5 m |
| Sleeping Accommodations | 4 persons |

*Weights are estimates and can vary from options and equipment added.

Engines

Gas:

MerCruiser

T 8.1 S HO, 420 HP (313 KW), FWC
T 8.1 S Horizon, 370 HP (276 KW), FWC

Volvo

T 8.1 Gi, 375 HP (280 KW), FWC
T 8.1 GXi, 420 HP (313 KW), FWC

Diesel:

Volvo

T TAMD74L, 430 HP (321 KW), Electronic Controls, FWC
T D6, 370 HP (276 KW), Electronic Controls, FWC
D6, 310 HP (231 KW), IPS
D6, 370 HP (276 KW), IPS

Yanmar

T 6LY2A-STP, 440 HP (328 KW), Electronic Controls, FWC
T 6LYA-STP, 370 HP (276 KW), Electronic Controls, FWC



DECK HARDWARE GENERAL LAYOUT – PARTS LIST

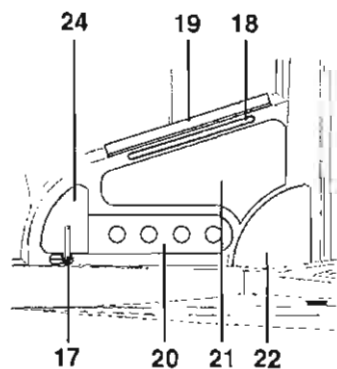
1. Windlass Kit
2. Windlass Handle
3. Chain Snubber
4. Cleat
5. Windlass IN Foot Pad
6. Windlass OUT Foot Pad
7. Cleat
8. Navigation Lights
9. Bow Roller
10. Round Hatch
11. Dual Air Horn
12. Courtesy Lights
13. Cockpit Insert, Bottle Storage Top
14. Hand Rail
15. Module Switch Box
16. Cockpit Shower System
17. Faucet
18. Grab Rail
19. Refrigerator/Freezer with Icemaker
20. Wetbar Insert
21. Wetbar Insert
22. Wetbar Insert
23. Fuel Fill Deck Plate
24. Wetbar Insert
25. Wiper Kit Motor
26. Wiper Kit Motor
27. Windshield Stand-Off
28. Swim Ladder and Hatch

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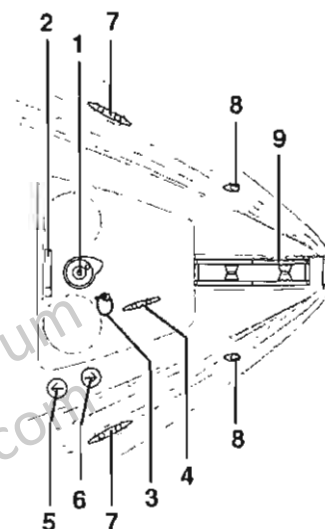


Section 2

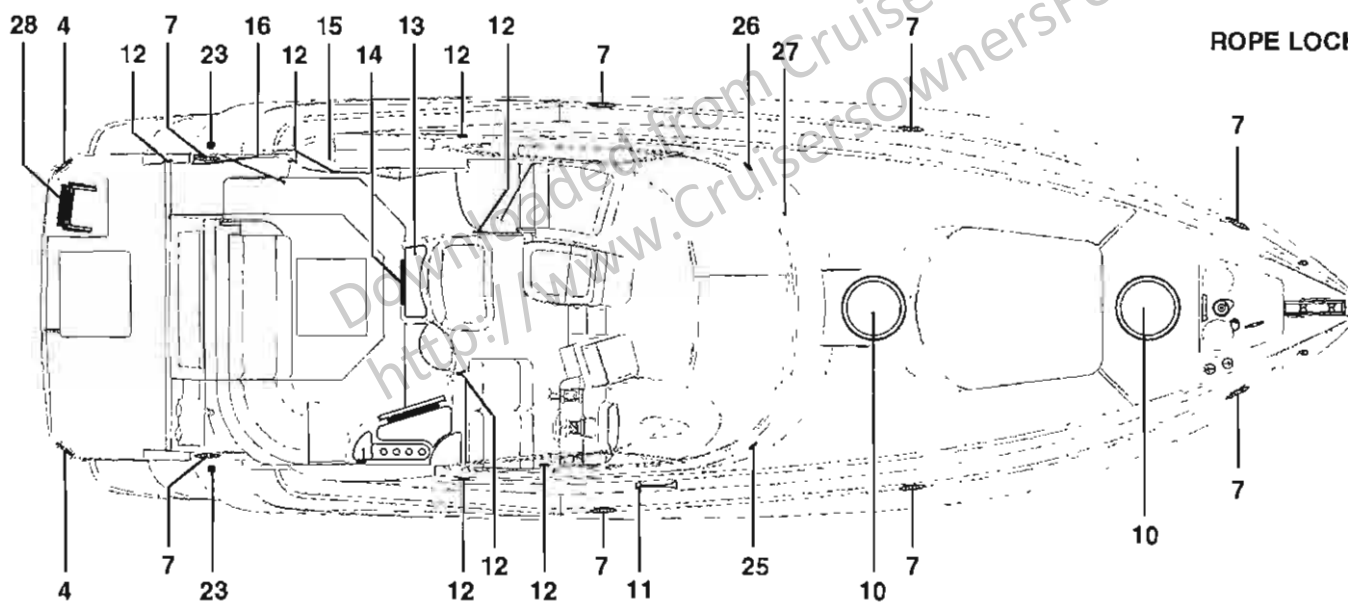
DECK HARDWARE GENERAL LAYOUT



WETBAR AREA HARDWARE



ROPE LOCKER HARDWARE



400-10.1



DECK HARDWARE GENERAL LAYOUT – PARTS LIST

1. Windlass Kit
2. Windlass Handle
3. Chain Snubber
4. Cleat
5. Windlass IN Foot Pad
6. Windlass OUT Foot Pad
7. Cleat
8. Navigation Lights
9. Bow Roller
10. Round Hatch
11. Dual Air Horn
12. Courtesy Lights
13. Cockpit Insert, Bottle Storage Top
14. Hand Rail
15. Module Switch Box
16. Cockpit Shower System
17. Faucet
18. Grab Rail
19. Refrigerator/Freezer with Icemaker
20. Wetbar Insert
21. Wetbar Insert
22. Wetbar Insert
23. Fuel Fill Deck Plate
24. Wetbar Insert
25. Wiper Kit Motor
26. Wiper Kit Motor
27. Windshield Stand-Off
28. Swim Ladder and Hatch

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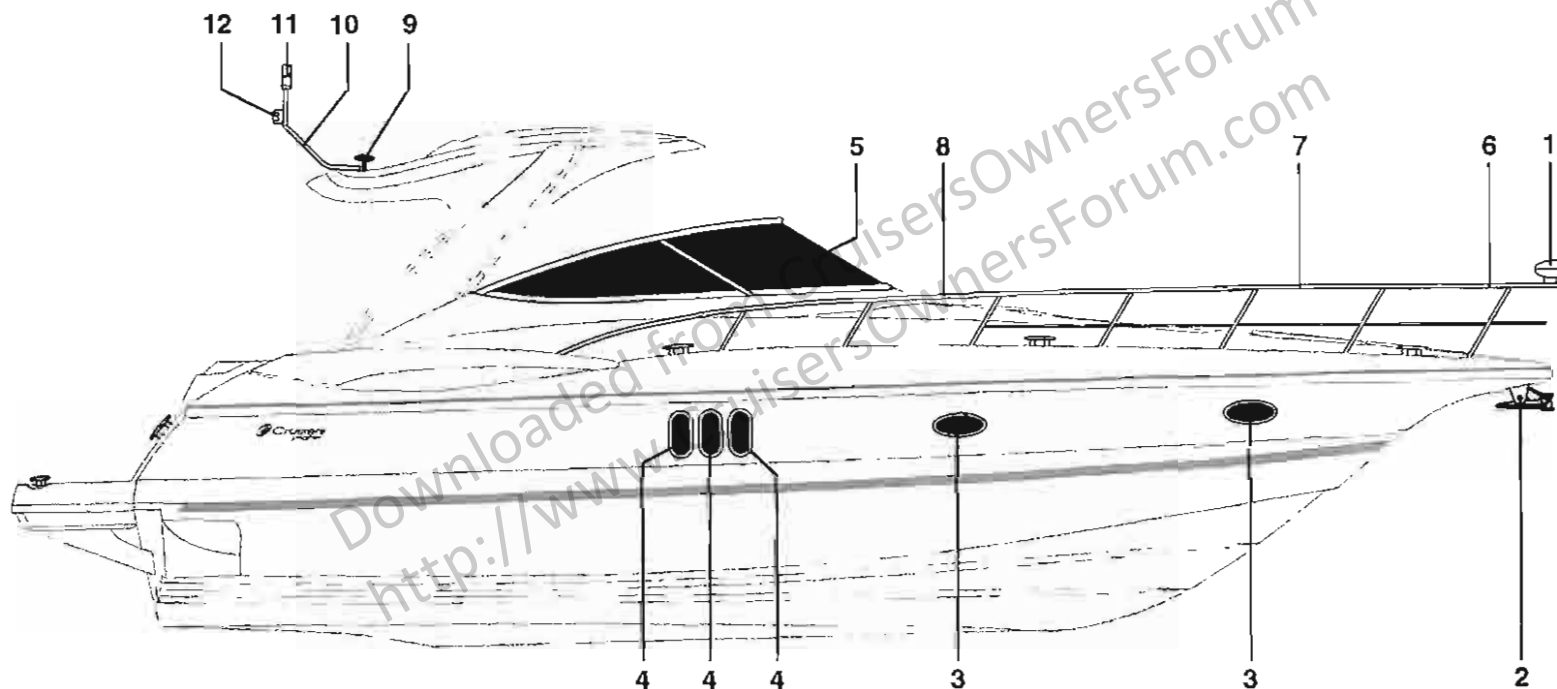
Section 2

DECK HARDWARE GENERAL LAYOUT (CON'T.)

1. Spotlight
2. Anchor
3. Privacy Porthole
4. Opening Portlight

5. Windshield
6. Bow Pulpit Rail
7. Bow Rail
8. Bow End Rail

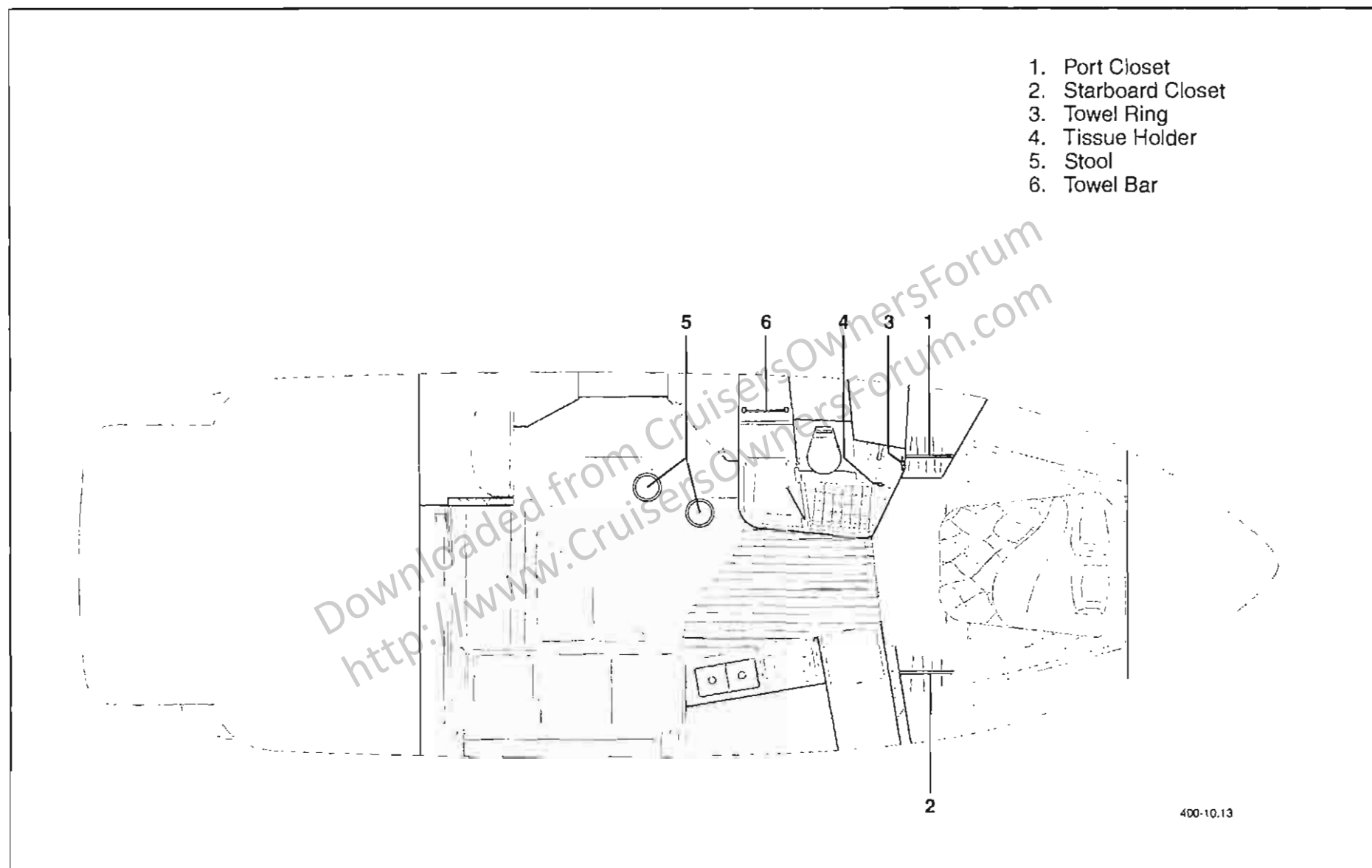
9. TV Antenna
10. Head Mast Light
11. Arch Light
12. Mast Light Bracket



400-10.3



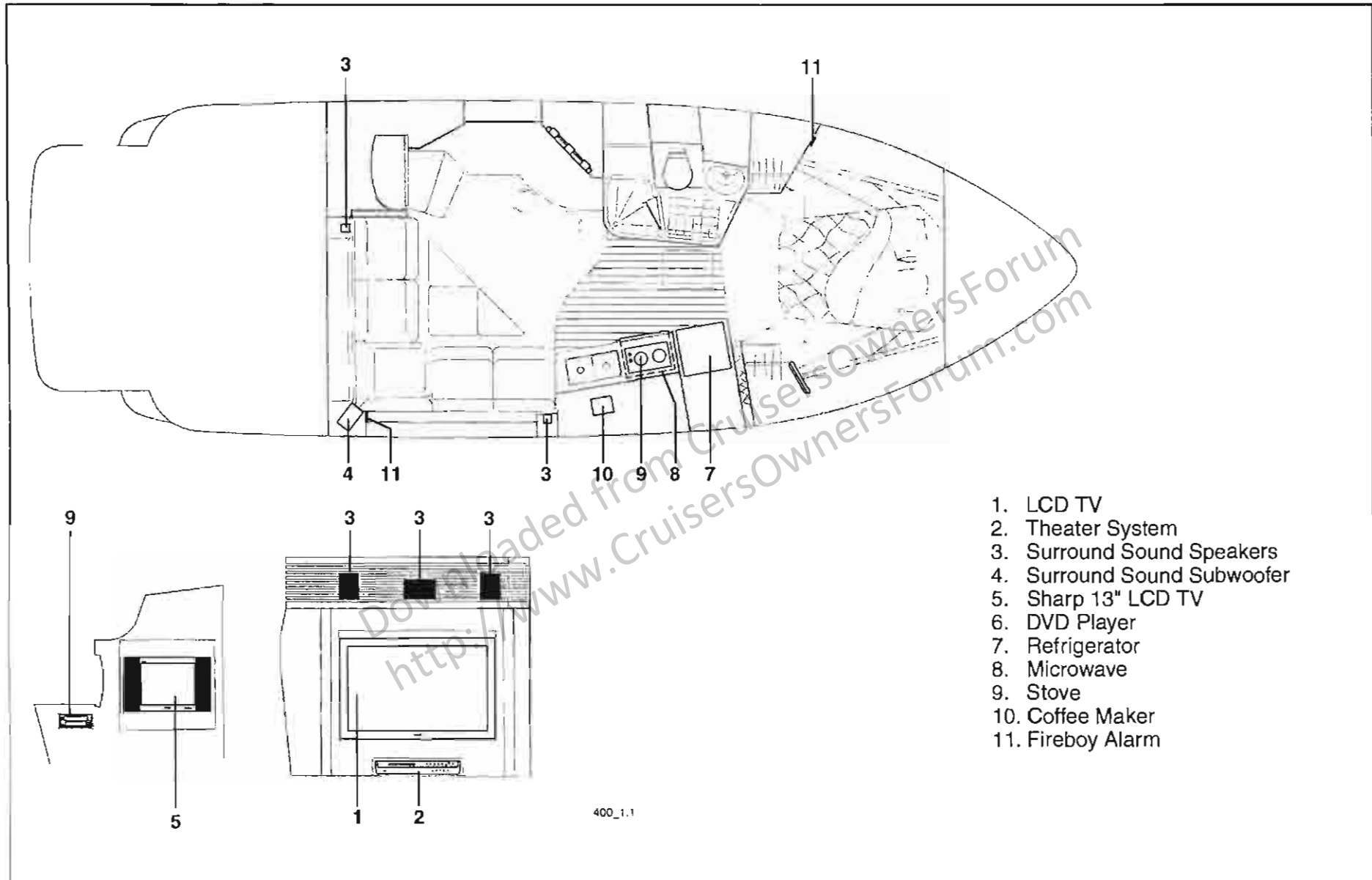
INTERIOR GENERAL LAYOUT





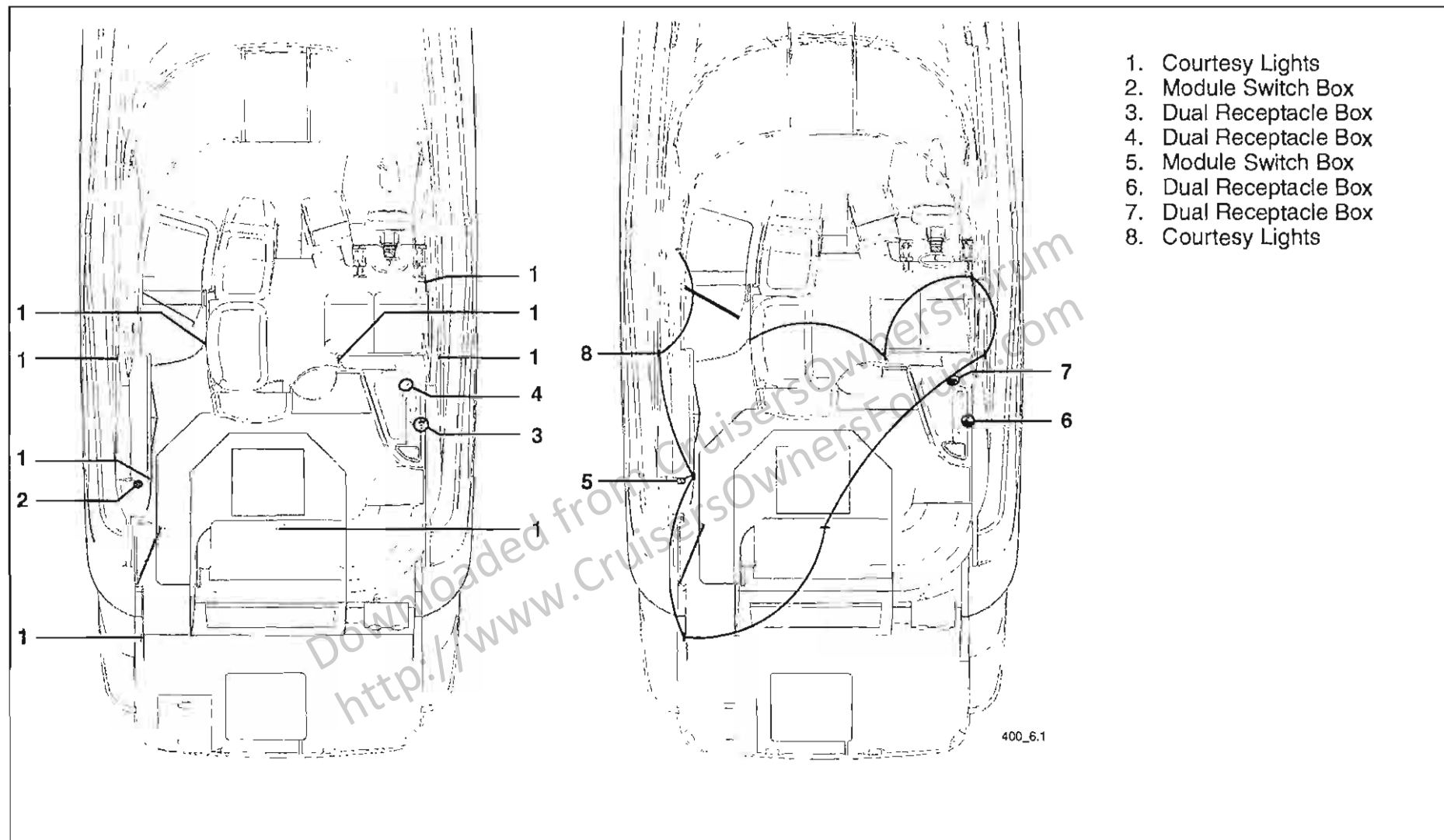
Section 2

INTERIOR GENERAL LAYOUT (CON'T.)





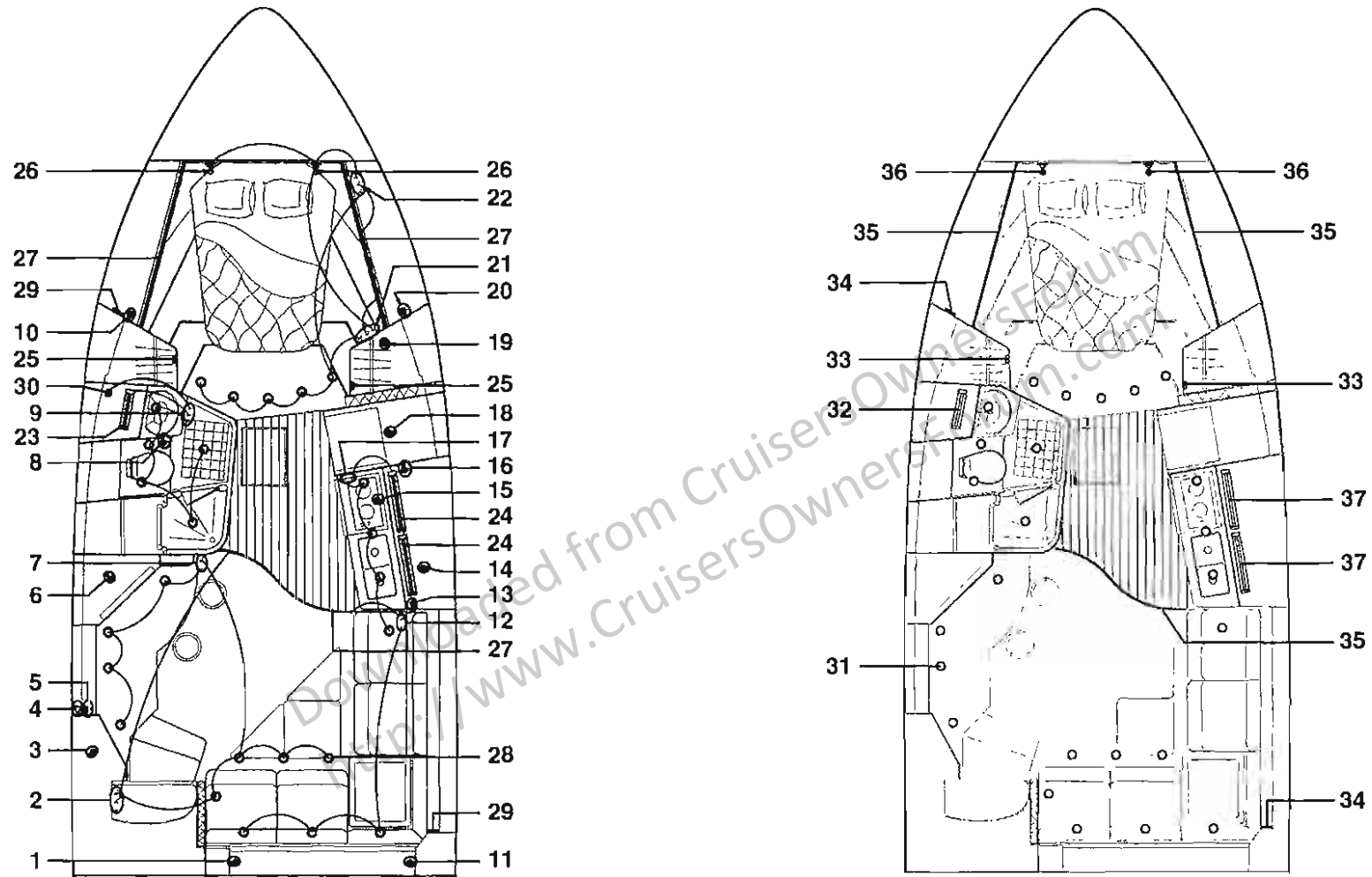
COCKPIT LIGHT PLAN LAYOUT





Section 2

INTERIOR LIGHT PLAN LAYOUT



400-6.3



INTERIOR LIGHT PLAN LAYOUT – PARTS LIST

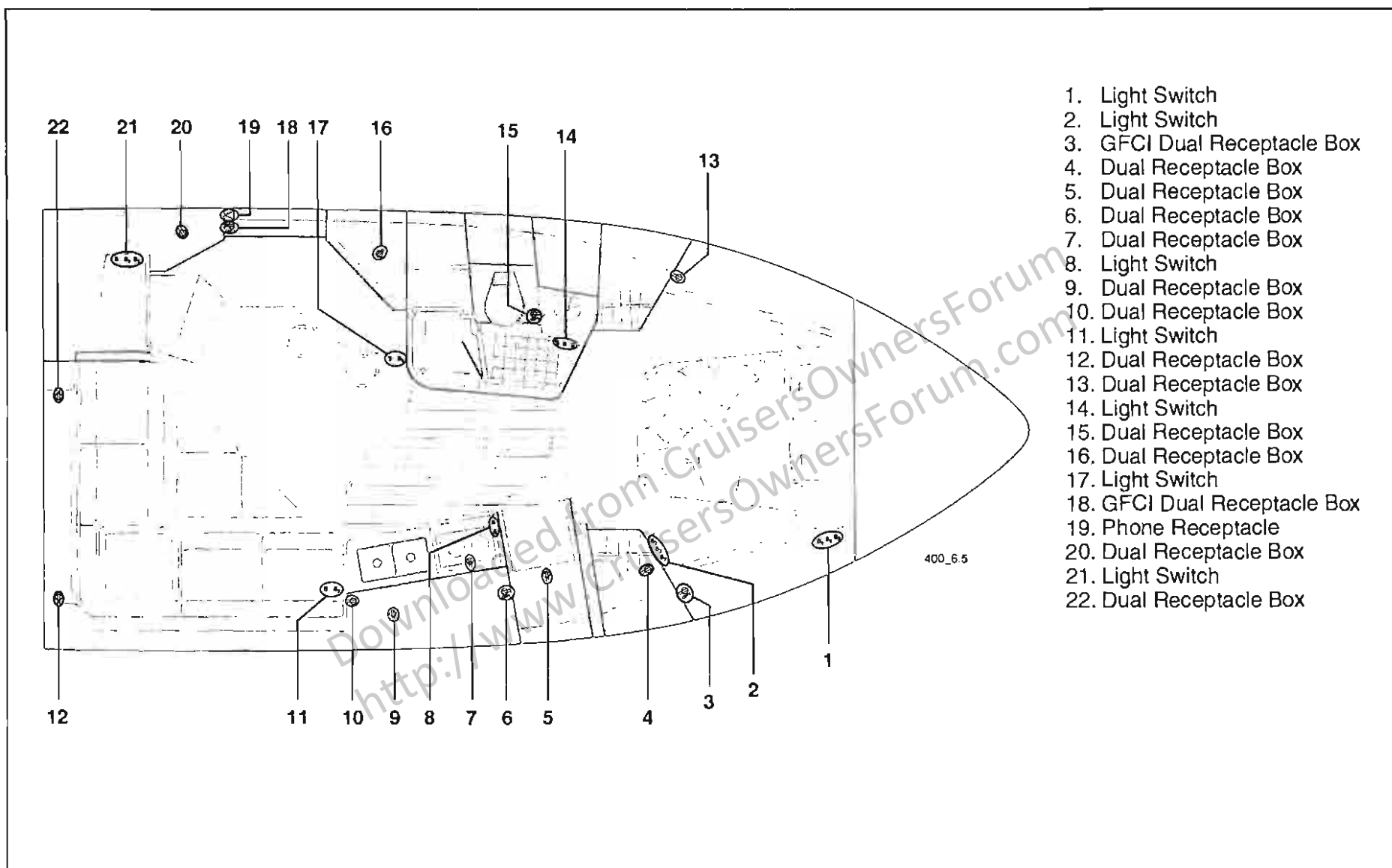
1. Dual Receptacle Box
2. Light Switch
3. Dual Receptacle Box
4. Phone Receptacle
5. GFCI Dual Receptacle Box
6. Dual Receptacle Box
7. Light Switch
8. Fluorescent Light
9. GFCI Dual Receptacle Box
10. Dual Receptacle Box
11. Dual Receptacle Box
12. Light Switch
13. Dual Receptacle Box
14. Dual Receptacle Box
15. Dual Receptacle Box
16. GFCI Dual Receptacle Box
17. Light Switch
18. Dual Receptacle Box
19. Dual Receptacle Box
20. GFCI Dual Receptacle Box
21. Light Switch
22. Light Switch
23. Fluorescent Light
24. Fluorescent Light
25. Closet Light
26. Reading Light
27. Rope Lighting
28. Overhead Light
29. Carbon Monoxide Detector
30. Head Vent
31. Overhead Light
32. Fluorescent Light
33. Closet Light
34. Carbon Monoxide Detector
35. Rope Lighting
36. Reading Light
37. Fluorescent Light

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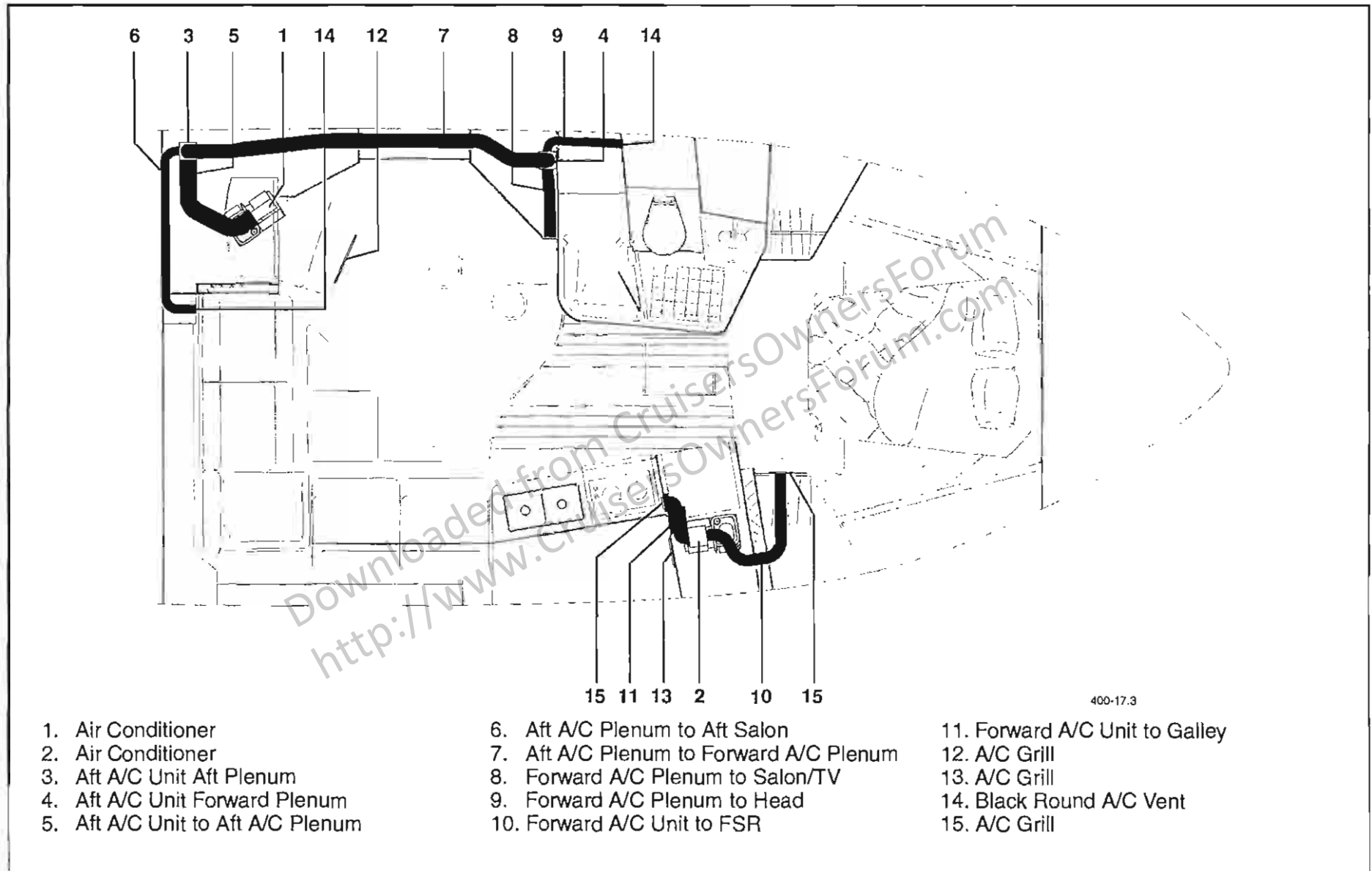
Section 2

INTERIOR LIGHT PLAN LAYOUT (CON'T.)





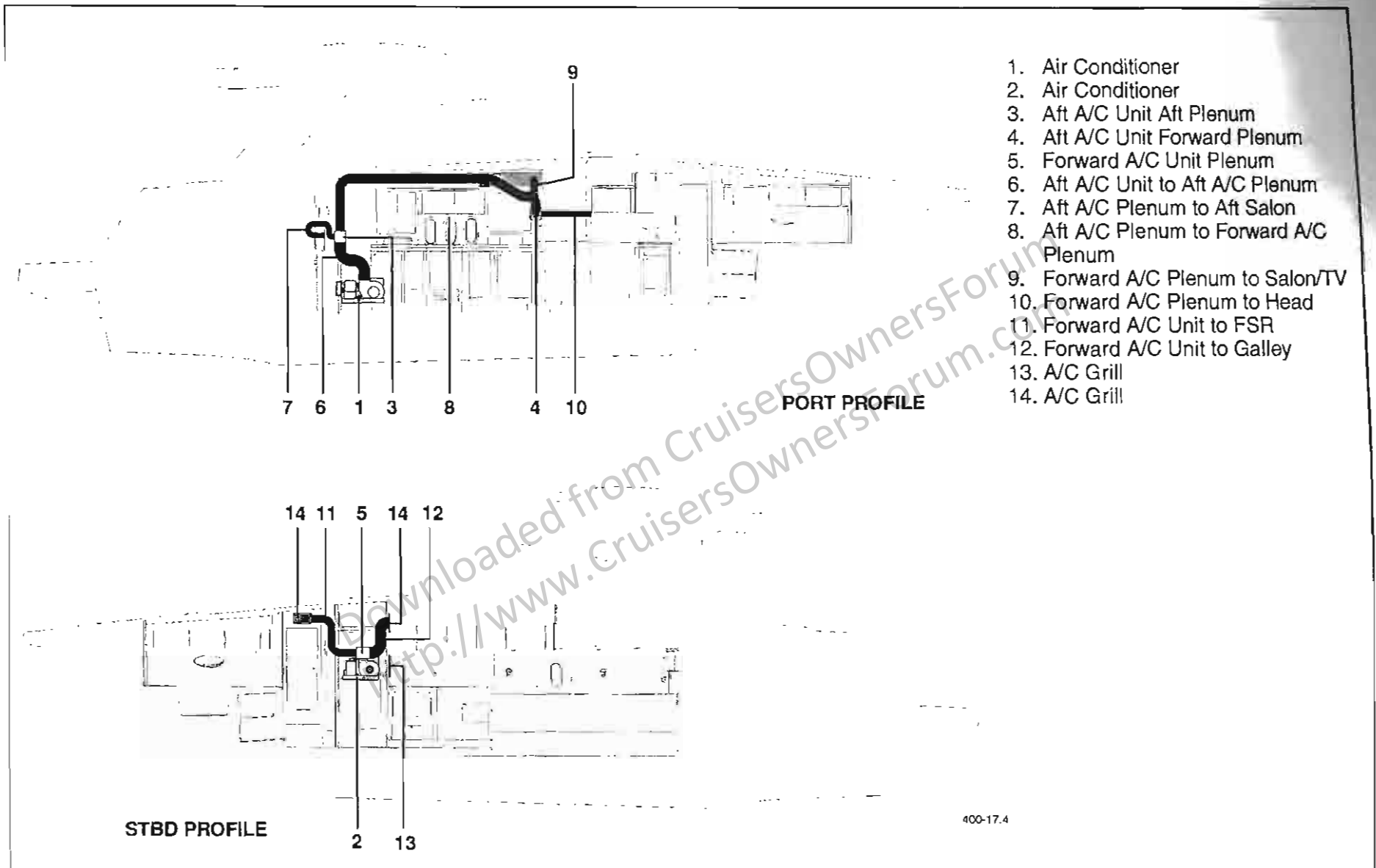
A/C PLAN VIEW





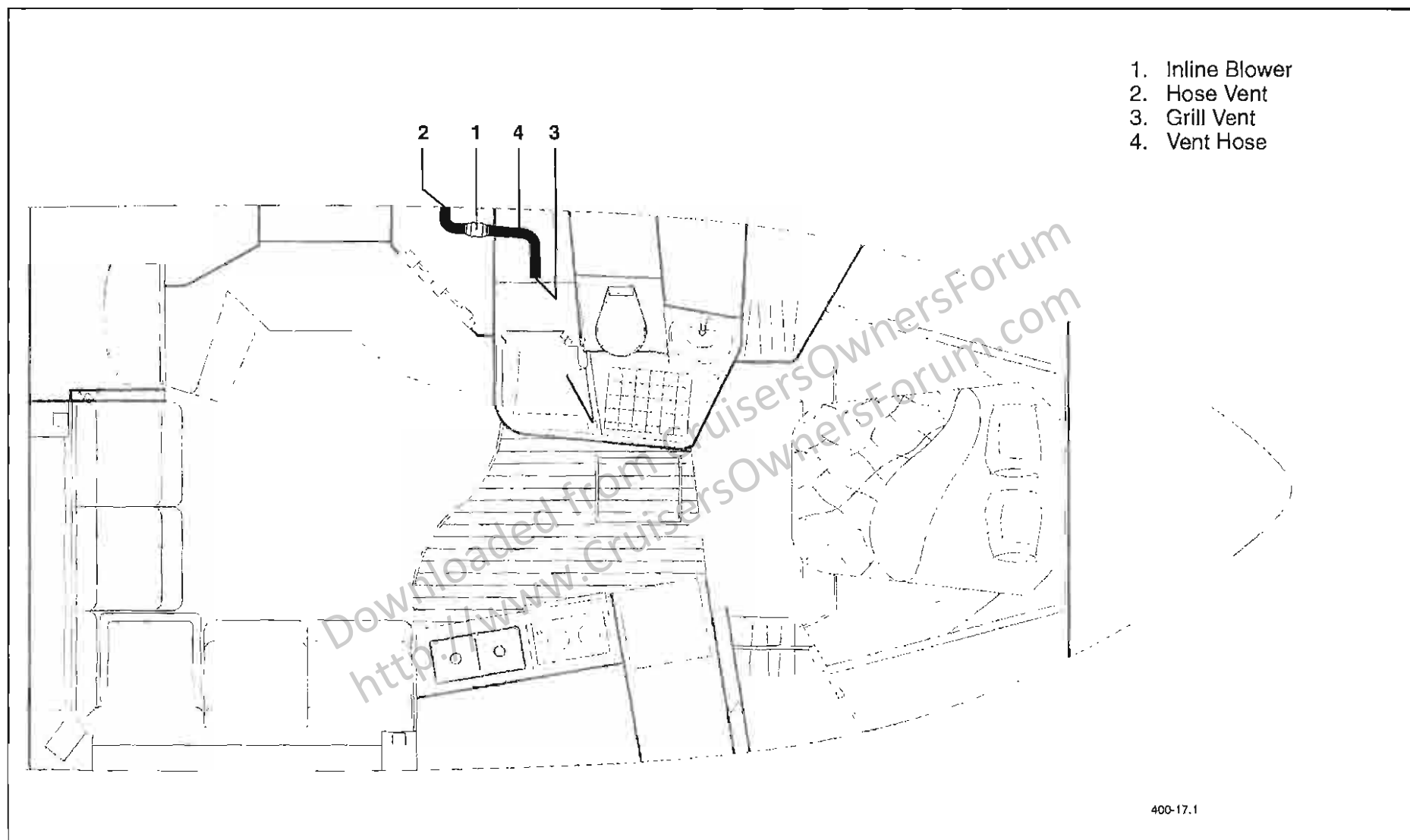
Section 2

STARBOARD A/C VIEW AND PORT A/C VIEW





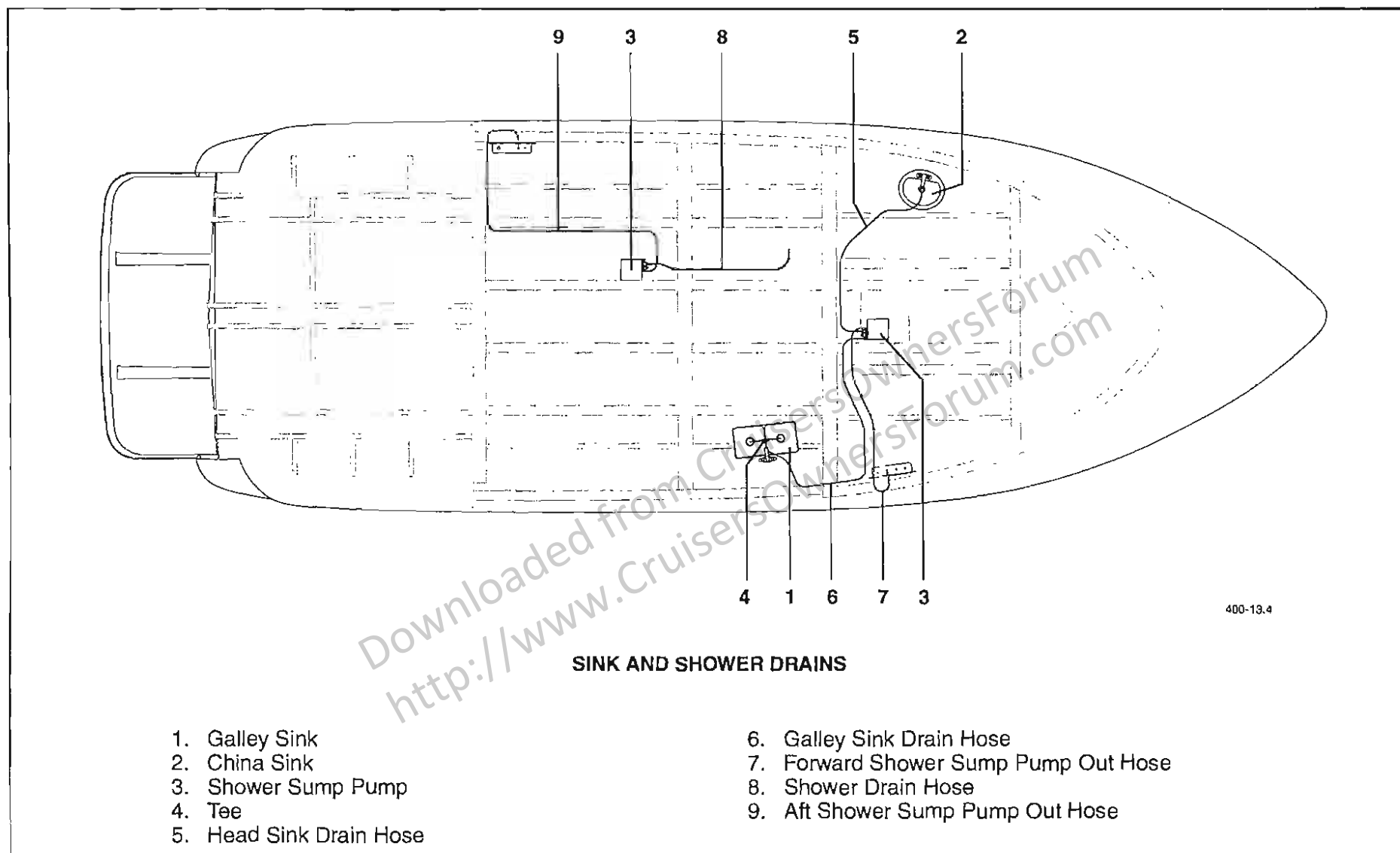
HEAD VENTILATION





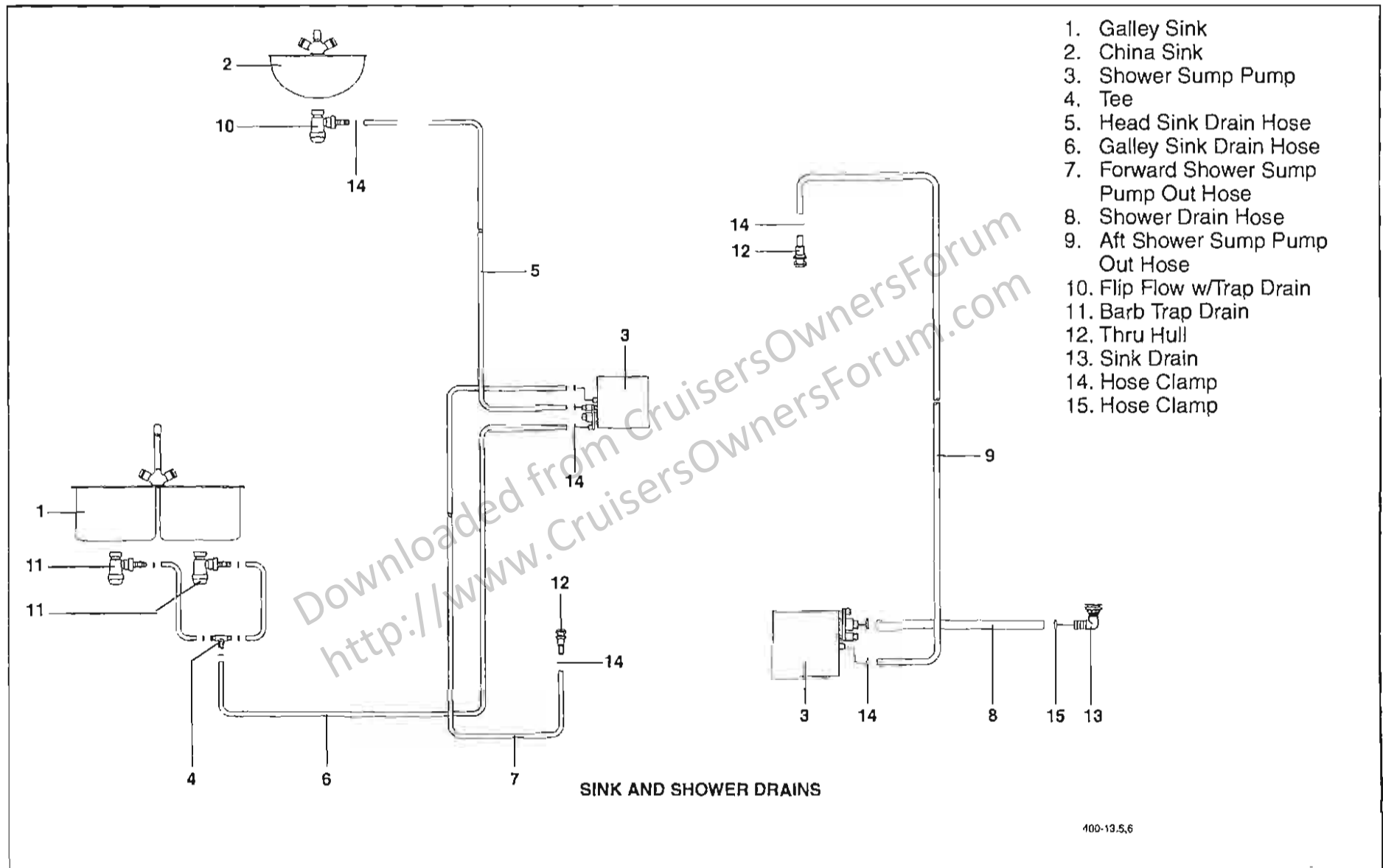
Section 2

PLUMBING HARDWARE





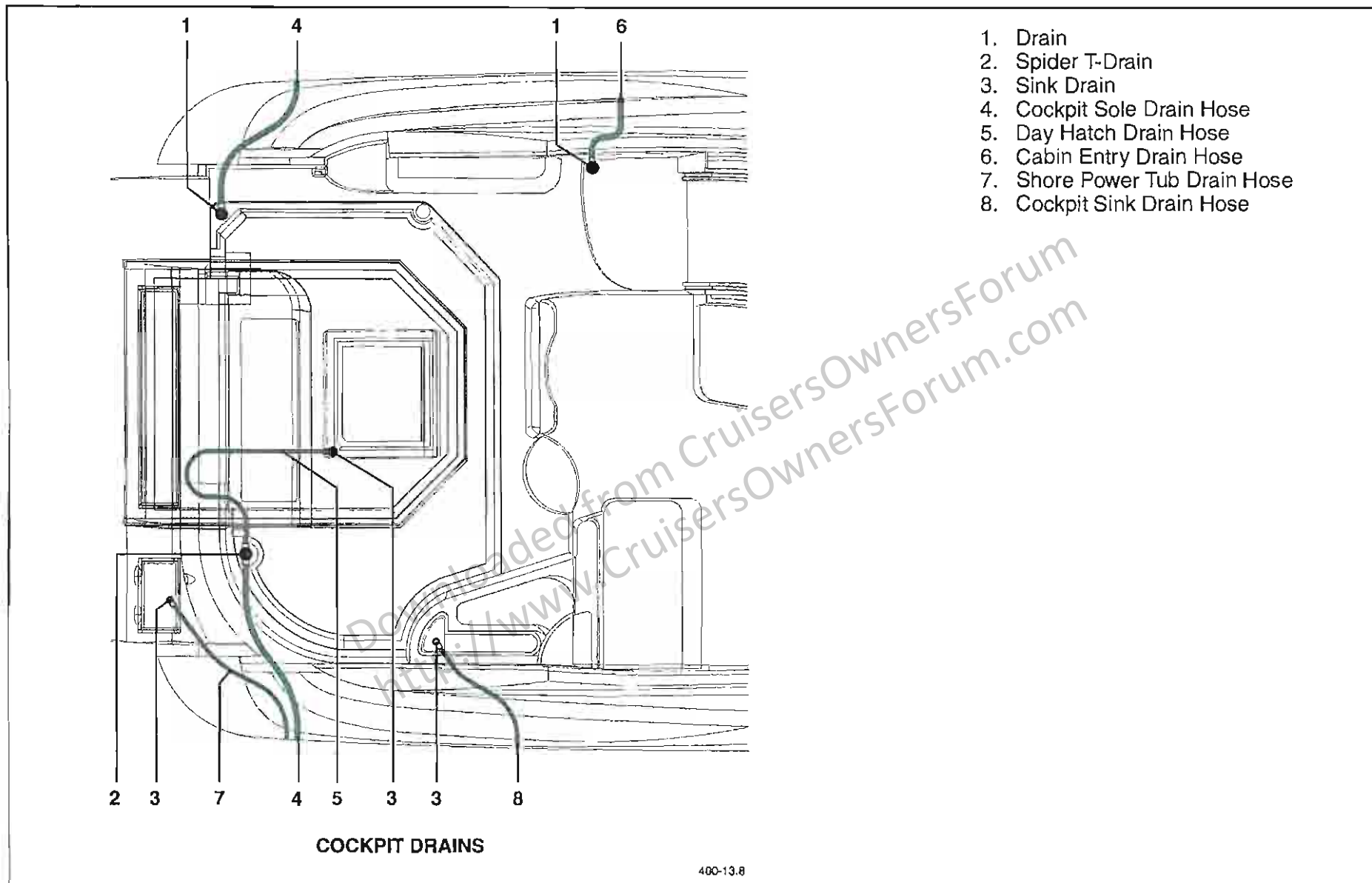
PLUMBING HARDWARE LAYOUT (CON'T.)





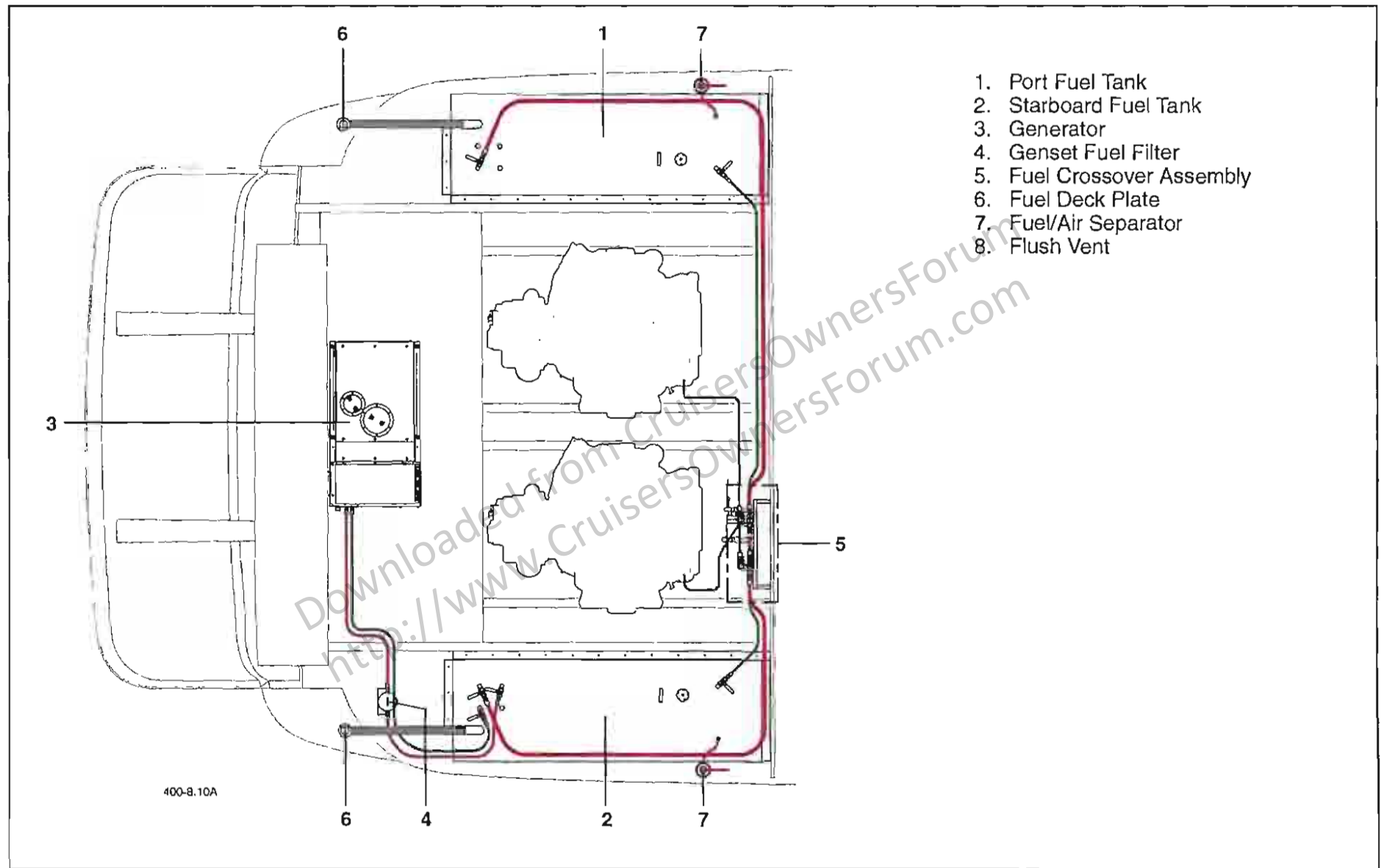
Section 2

PLUMBING HARDWARE LAYOUT (CON'T.)





GAS LAYOUT – WITH RETURN





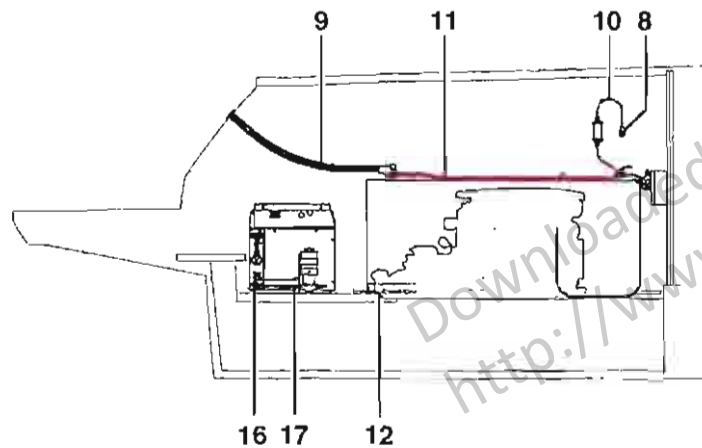
Section 2

GAS LAYOUT – WITH RETURN (CON'T.)

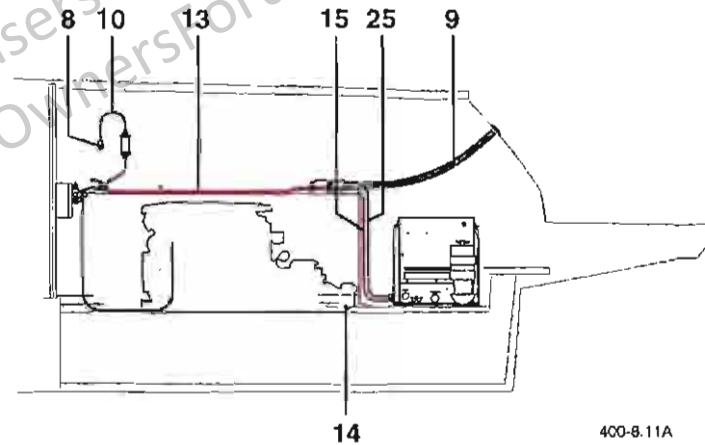
- 9. Fuel Tank Fill Hose
- 10. Fuel Tank Vent Hose
- 11. Port Fuel Tank Feed to Crossover
- 12. Port Engine Return to Crossover
- 13. Crossover to Port Fuel Tank Return
- 14. Starboard Fuel Tank Feed to Crossover

- 15. Starboard Engine Return to Crossover
- 16. Starboard Engine Return to Crossover
- 17. Crossover to Starboard Fuel Tank Return
- 18. Genset Fuel Filter
- 19. Fuel Filter to Genset
- 20. Genset Return to Starboard Fuel Tank

PORT PROFILE



STBD PROFILE



400-8.11A

1. Port Fuel Tank
2. Starboard Fuel Tank
3. Generator
4. Genset Fuel Filter
5. Fuel Crossover Assembly
6. Fuel Deck Plate
7. Fuel/Air Separator
8. Flush Vent

400-B.10B

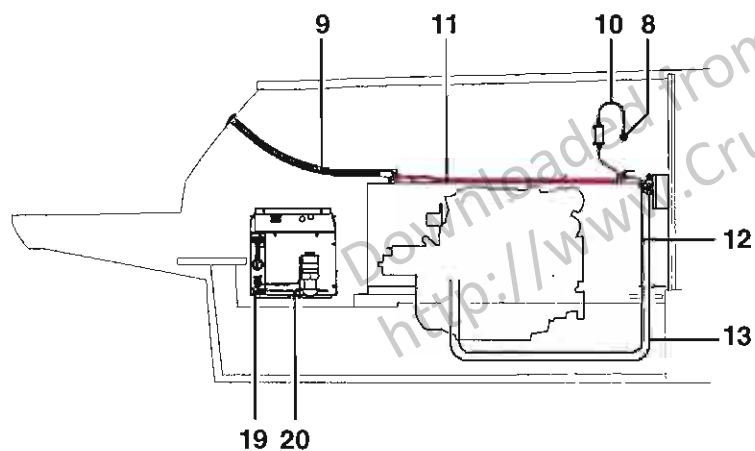


Section 2

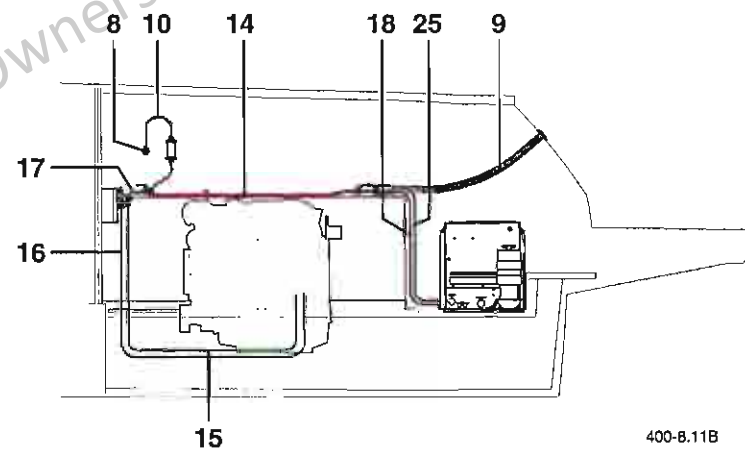
GAS LAYOUT – WITHOUT RETURN (CON'T.)

- 9. Fuel Tank Fill Hose
- 10. Fuel Tank Vent Hose
- 11. Port Fuel Tank Feed to Crossover
- 12. Port Engine Fuel Filter to Port Engine
- 13. Starboard Fuel Tank Feed To Crossover
- 14. Starboard Engine Fuel Filter to Starboard Engine
- 15. Starboard Fuel Tank to Genset Fuel Filter
- 16. Fuel Filter to Genset
- 17. Genset Return to Starboard Fuel Tank

PORT PROFILE



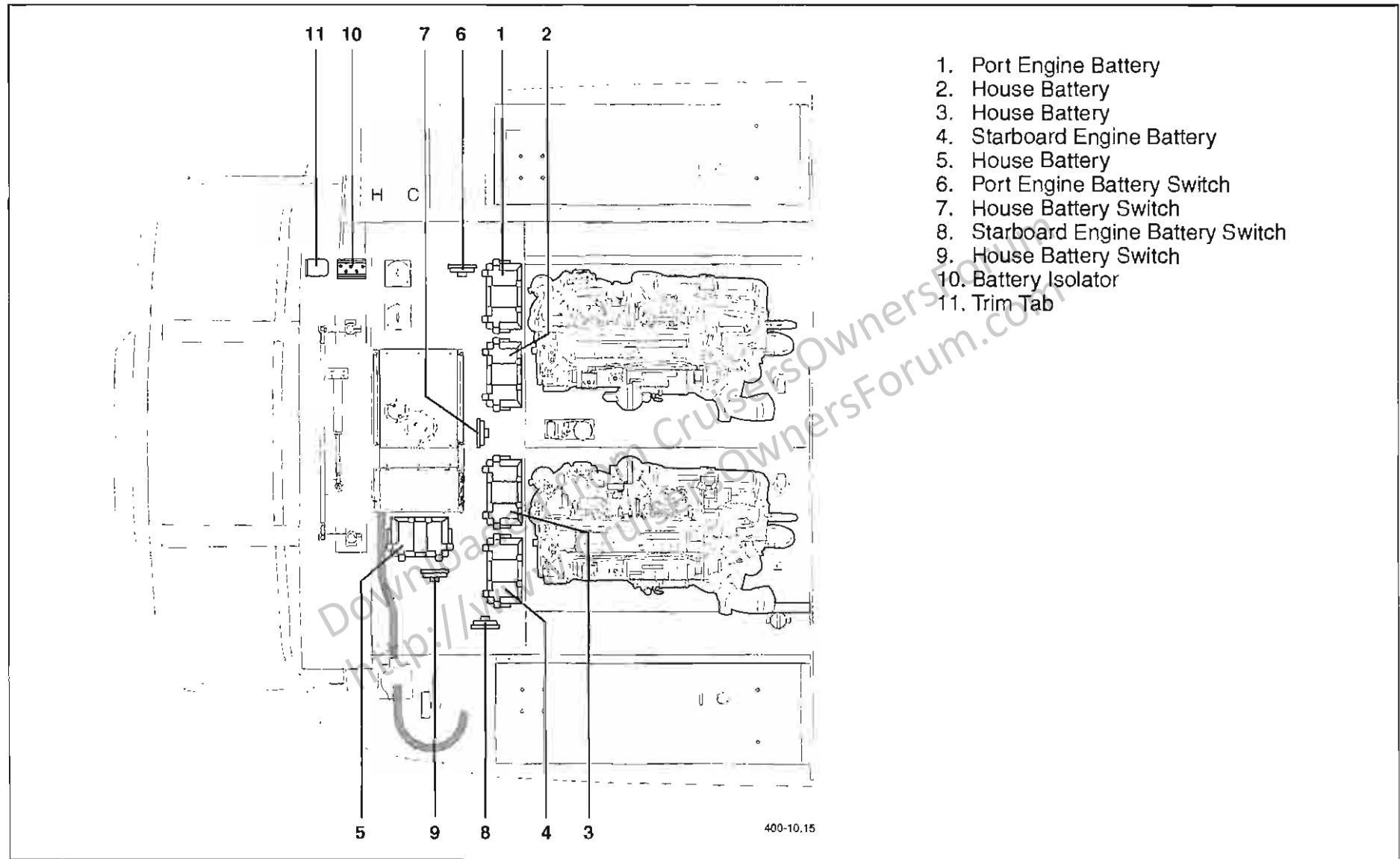
STBD PROFILE



400-8.11B



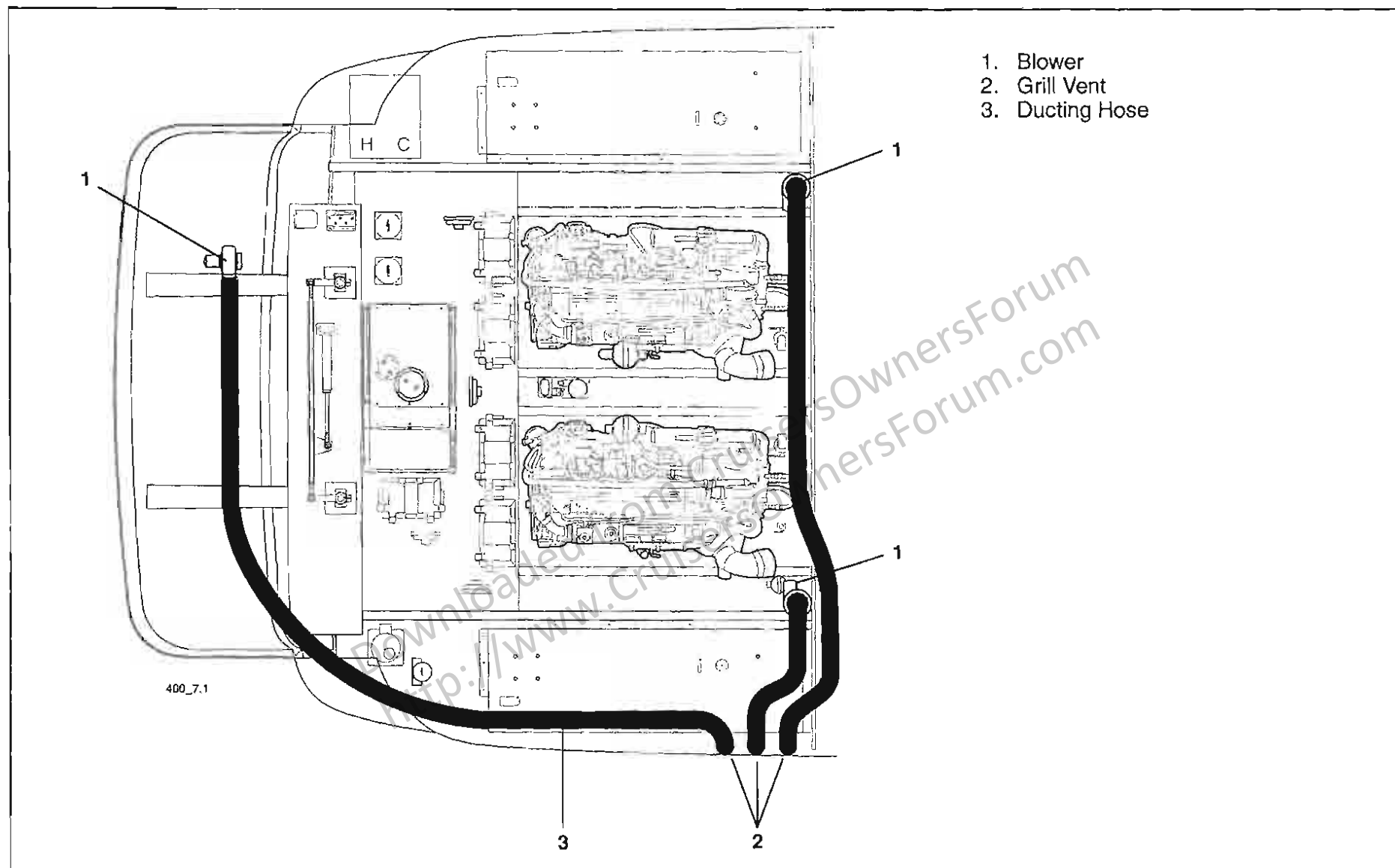
DIESEL ENGINE GENERAL LAYOUT





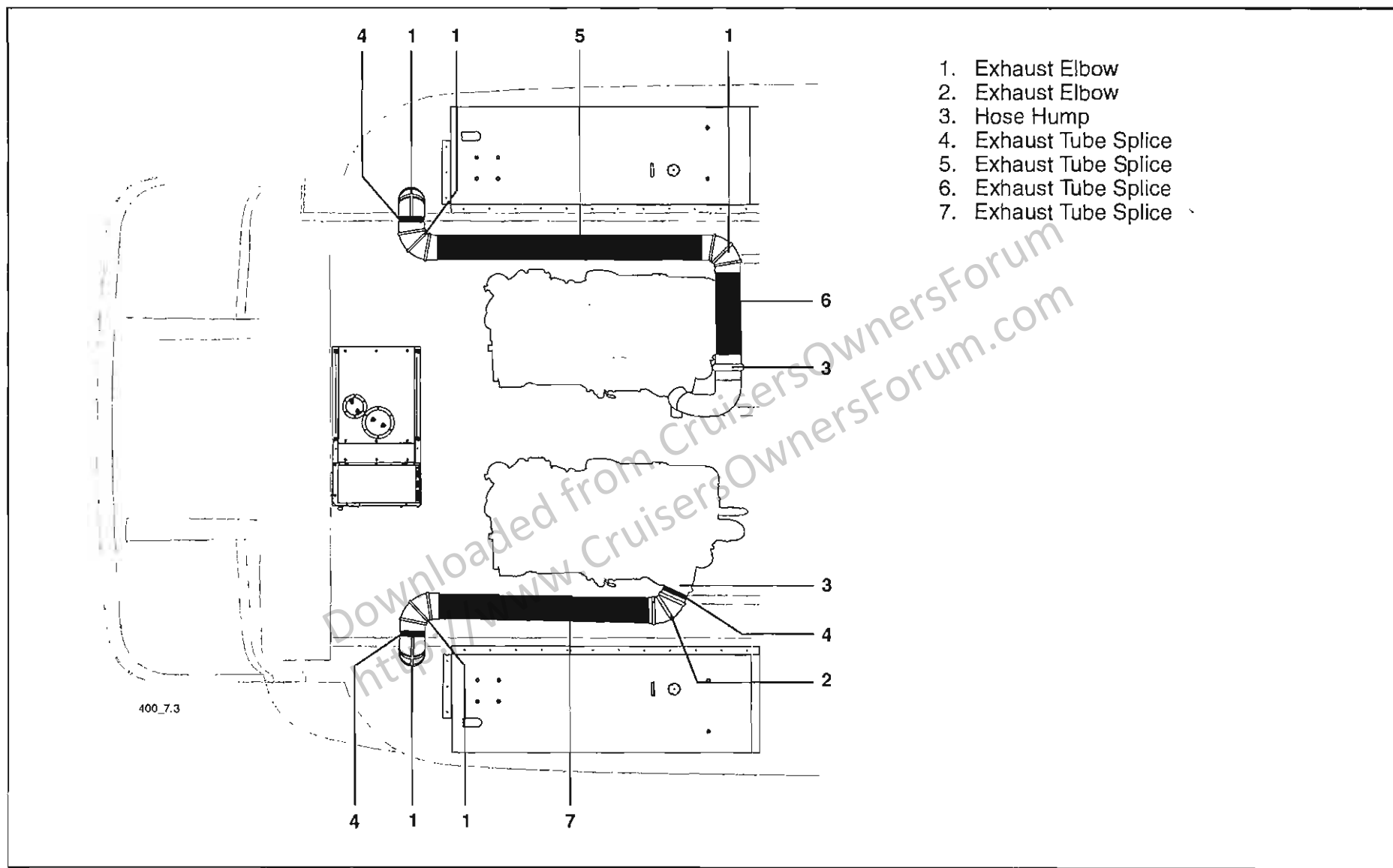
Section 2

DIESEL ENGINE GENERAL LAYOUT (CON'T.)



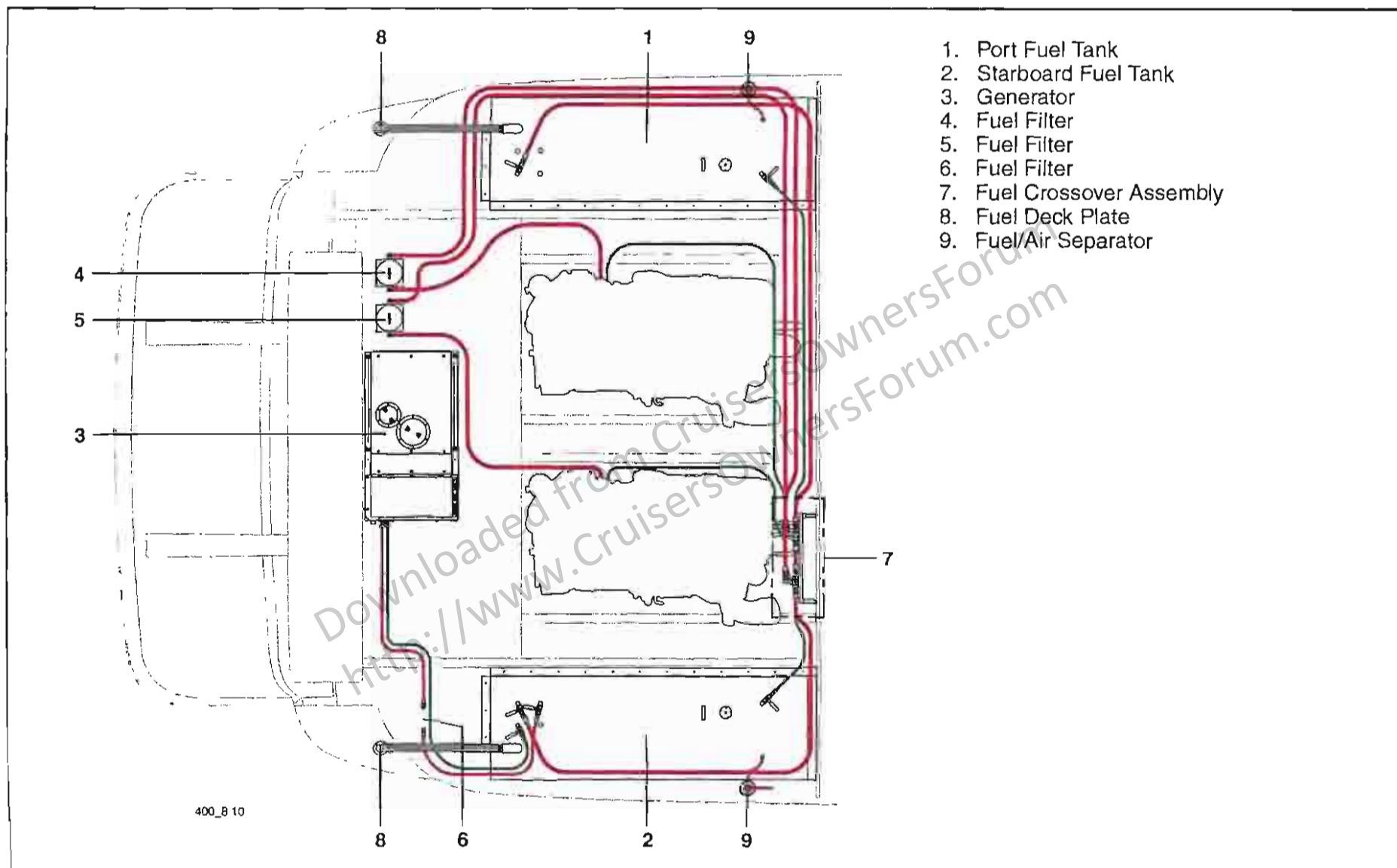


DIESEL ENGINE GENERAL LAYOUT (CON'T.)





DIESEL ENGINE GENERAL LAYOUT (CON'T.)



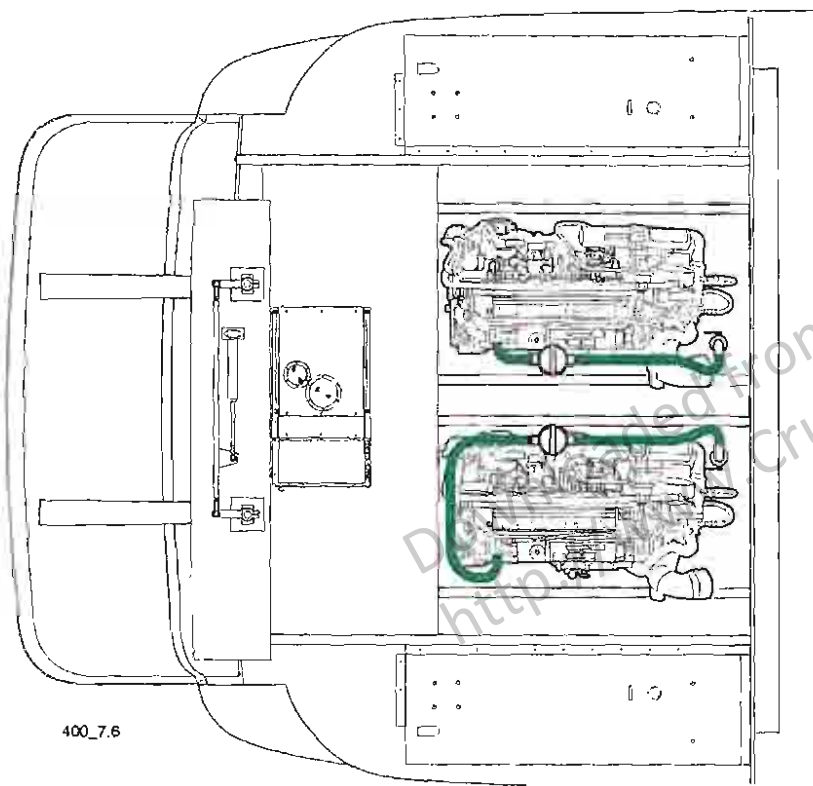


Section 2

DIESEL ENGINE GENERAL LAYOUT (CON'T.)

1. Scoop Strainer
2. Thru Hull
3. Seacock, Ball
4. Elbow
5. Adapter
6. Raw Water Strainer

7. Elbow
8. Adapter
9. Hose Clamp
10. Exhaust Hose
11. Exhaust Hose



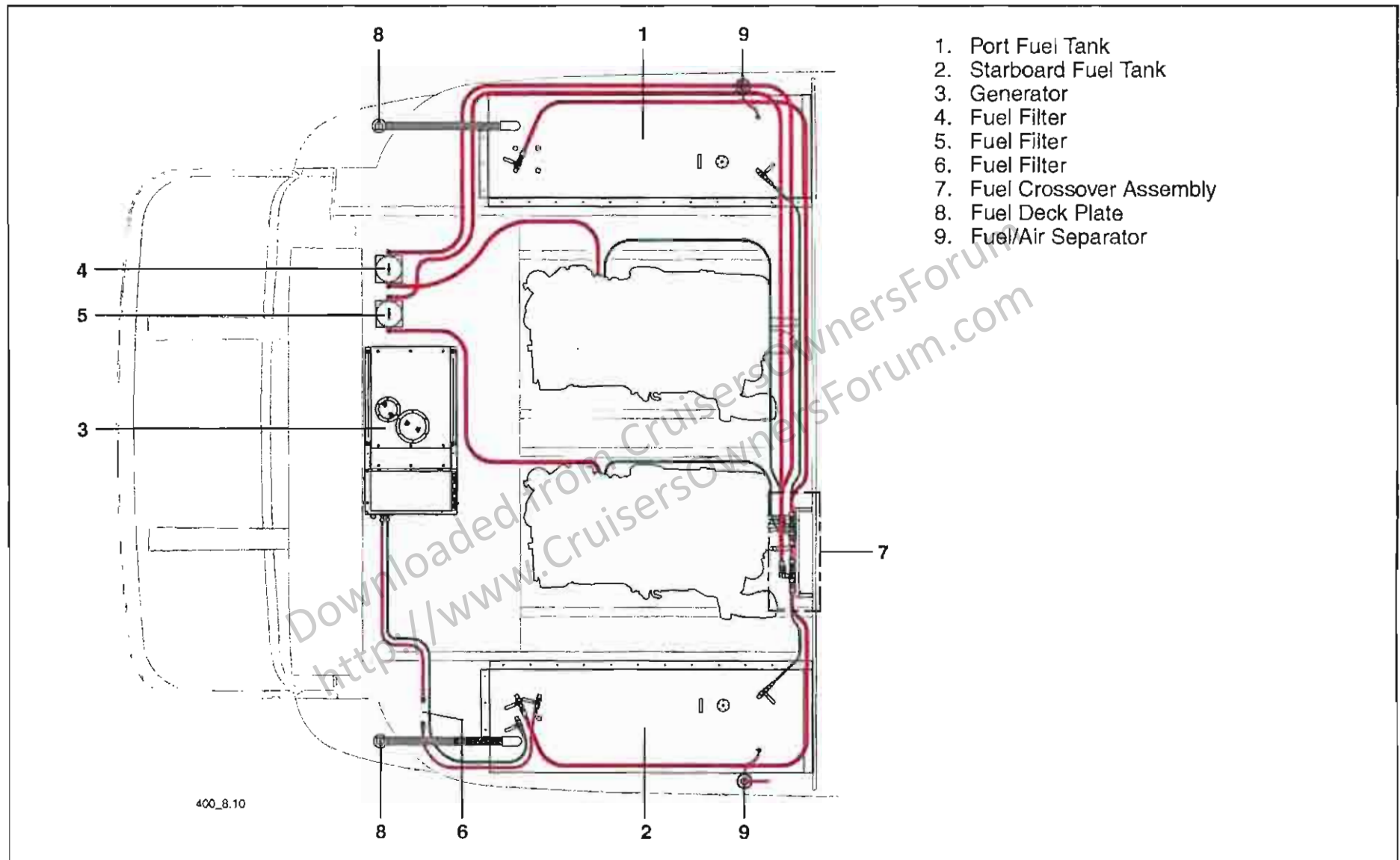
PORT ENGINE INTAKE

STBD ENGINE INTAKE

1



DIESEL ENGINE GENERAL LAYOUT (CON'T.)





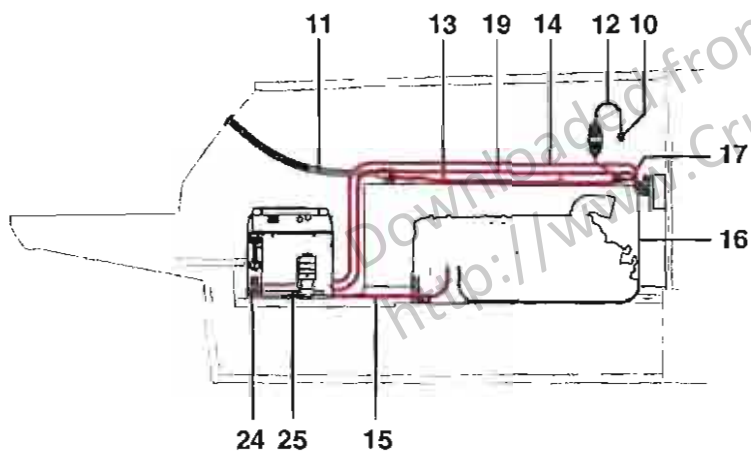
Section 2

DIESEL ENGINE GENERAL LAYOUT (CON'T.)

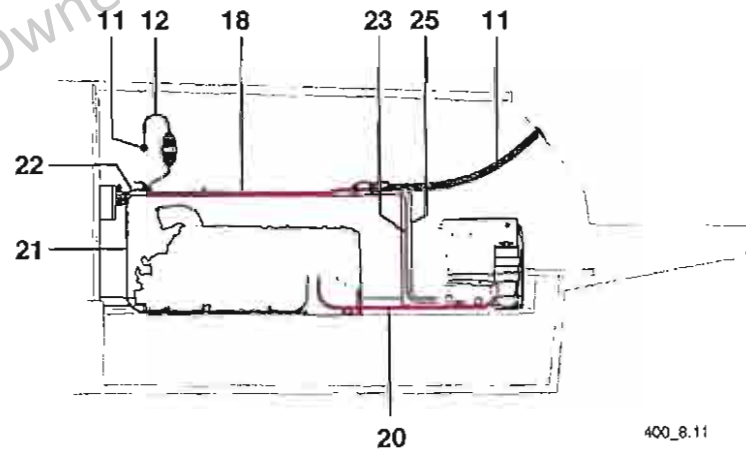
- 10. Flush Vent
- 11. Fuel Tank Fill Hose
- 12. Fuel Tank Vent Hose
- 13. Port Fuel Tank Feed to Crossover
- 14. Crossover to Port Engine Fuel Filter
- 15. Port Engine Fuel Filter to Port Engine
- 16. Port Engine Return to Crossover
- 17. Crossover to Port Fuel Tank Return
- 18. Starboard Fuel Tank Feed to Crossover

- 19. Crossover to Starboard Engine Fuel Filter
- 20. Starboard Engine Fuel Filter to Starboard Engine
- 21. Starboard Engine Return to Crossover
- 22. Crossover to Starboard Fuel Tank Return
- 23. Starboard Fuel Tank To Genset Fuel Filter
- 24. Fuel Filter to Genset
- 25. Genset Return to Starboard Fuel Tank

PORT PROFILE



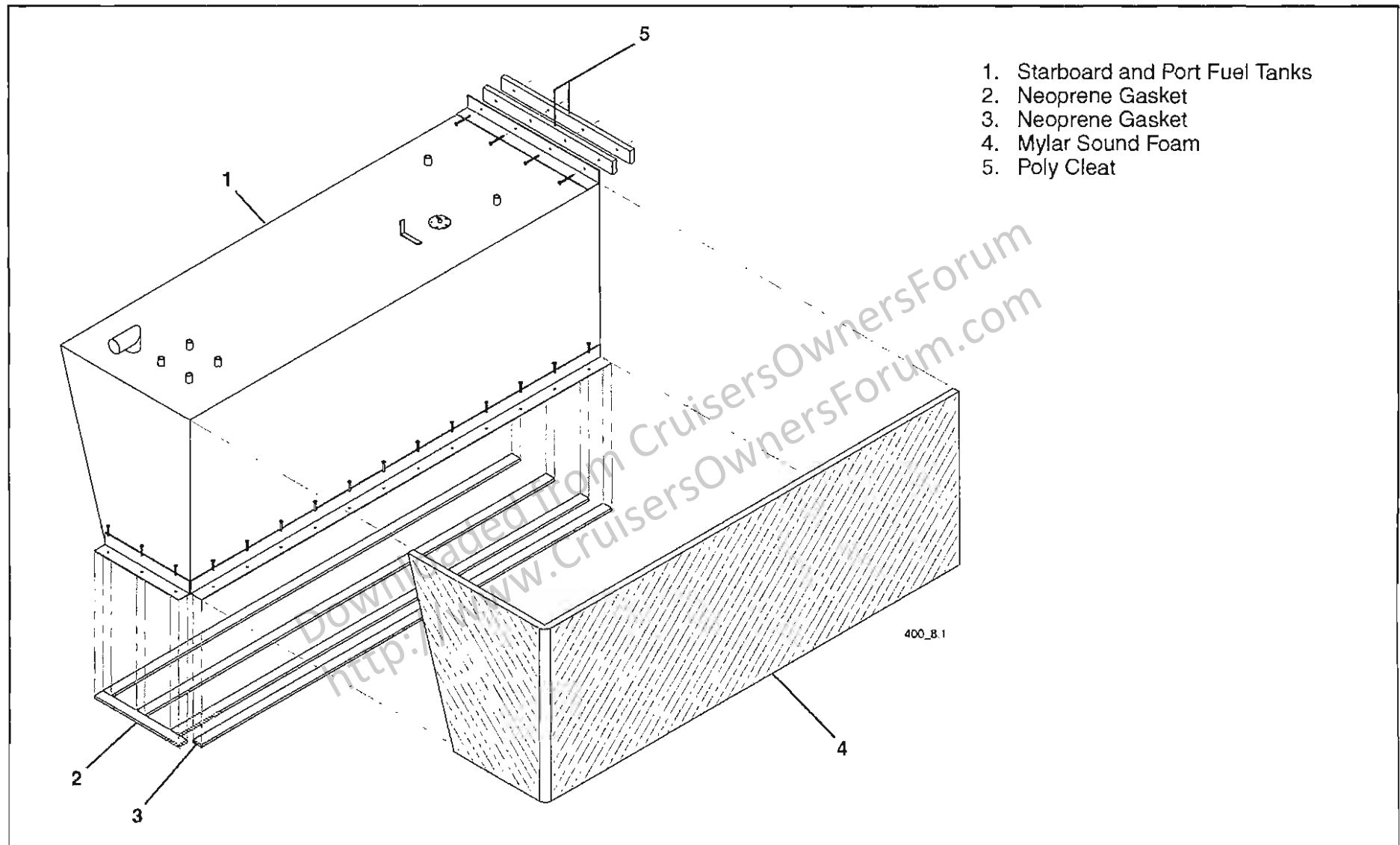
STBD PROFILE



400_8.11



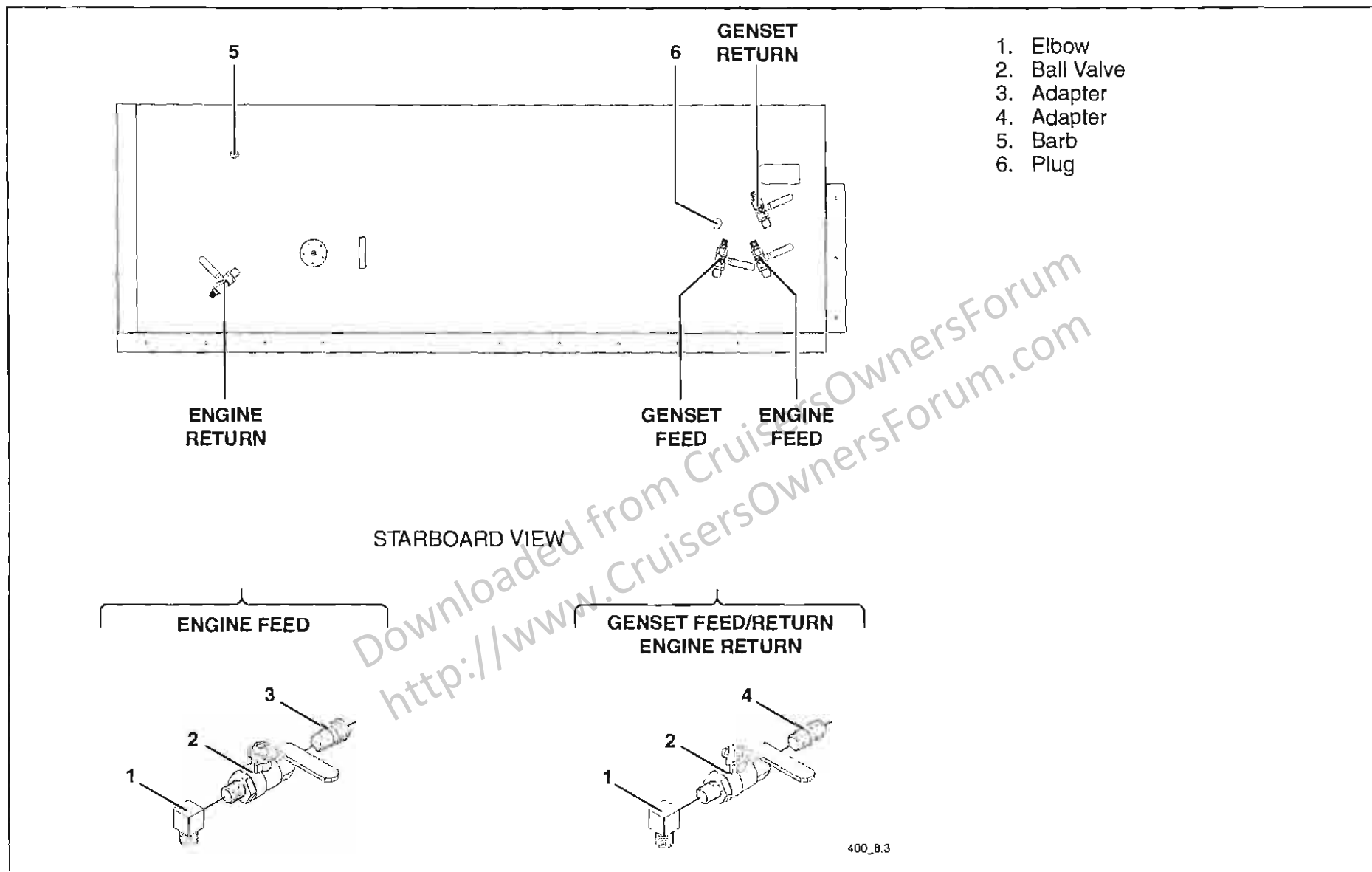
DIESEL FUEL TANK AND FITTINGS





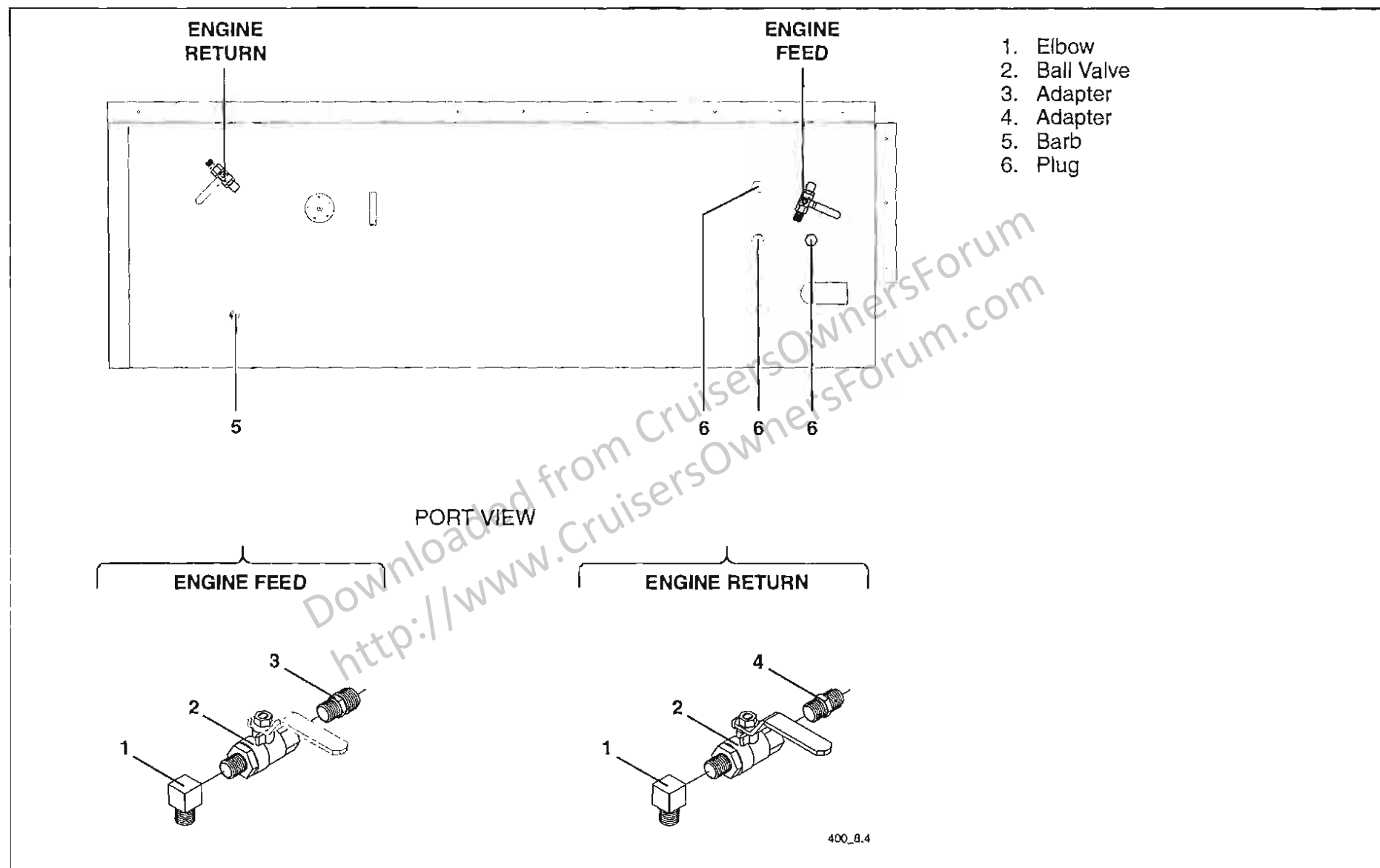
Section 2

DIESEL FUEL TANK AND FITTINGS (CON'T.)





DIESEL FUEL TANK AND FITTINGS (CON'T.)



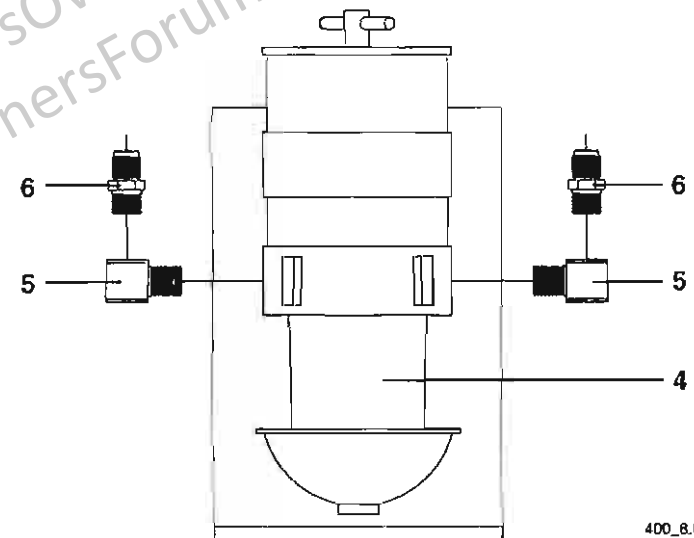
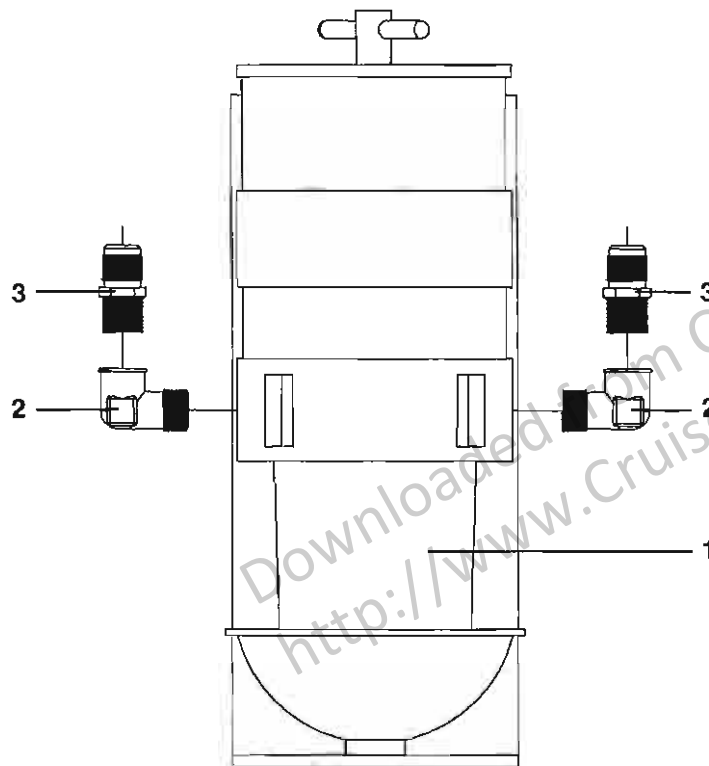


Section 2

DIESEL FUEL TANK AND FITTINGS (CON'T.)

1. Fuel Filter
2. Elbow
3. Adapter

4. Fuel Filter
5. Elbow
6. Adapter

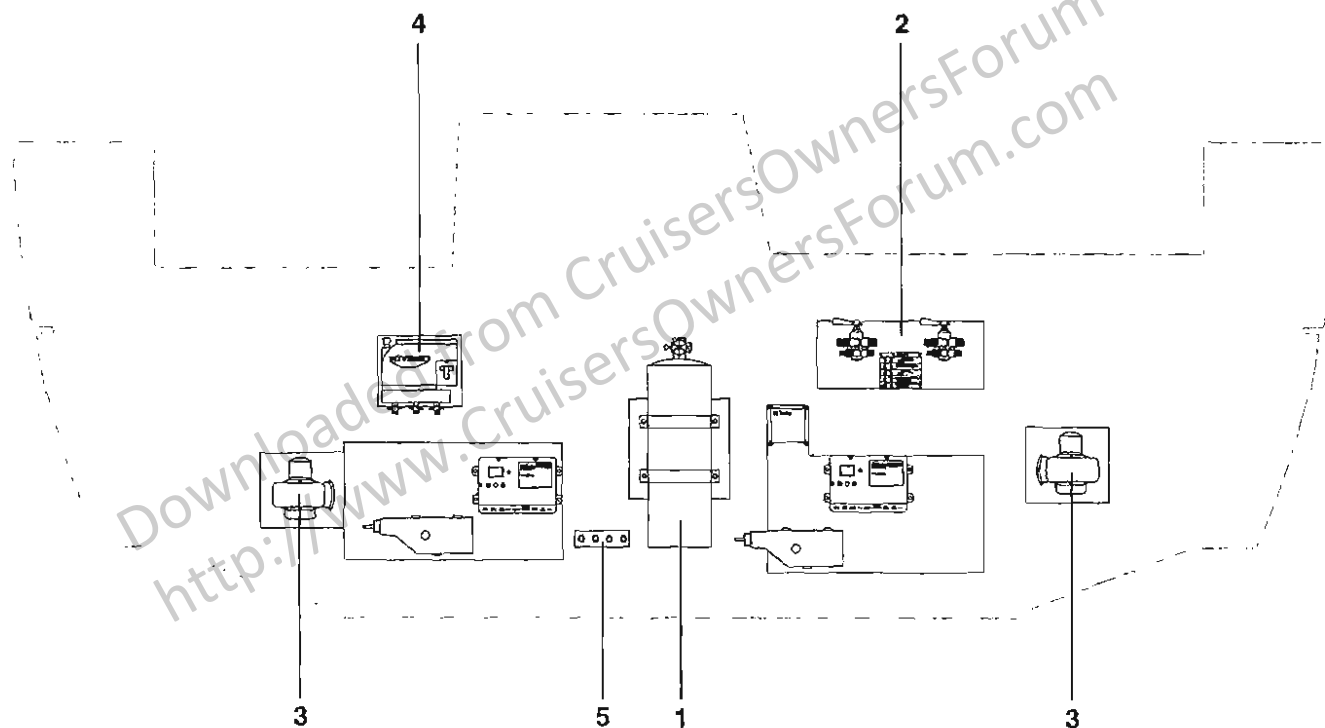


400_8.8



FORWARD ENGINE ROOM BULKHEAD (DIESEL)

1. Fire Extinguisher
2. Fuel Crossover Assembly
3. Blower
4. Oil Pump
5. Power Terminal Bar (Negative)

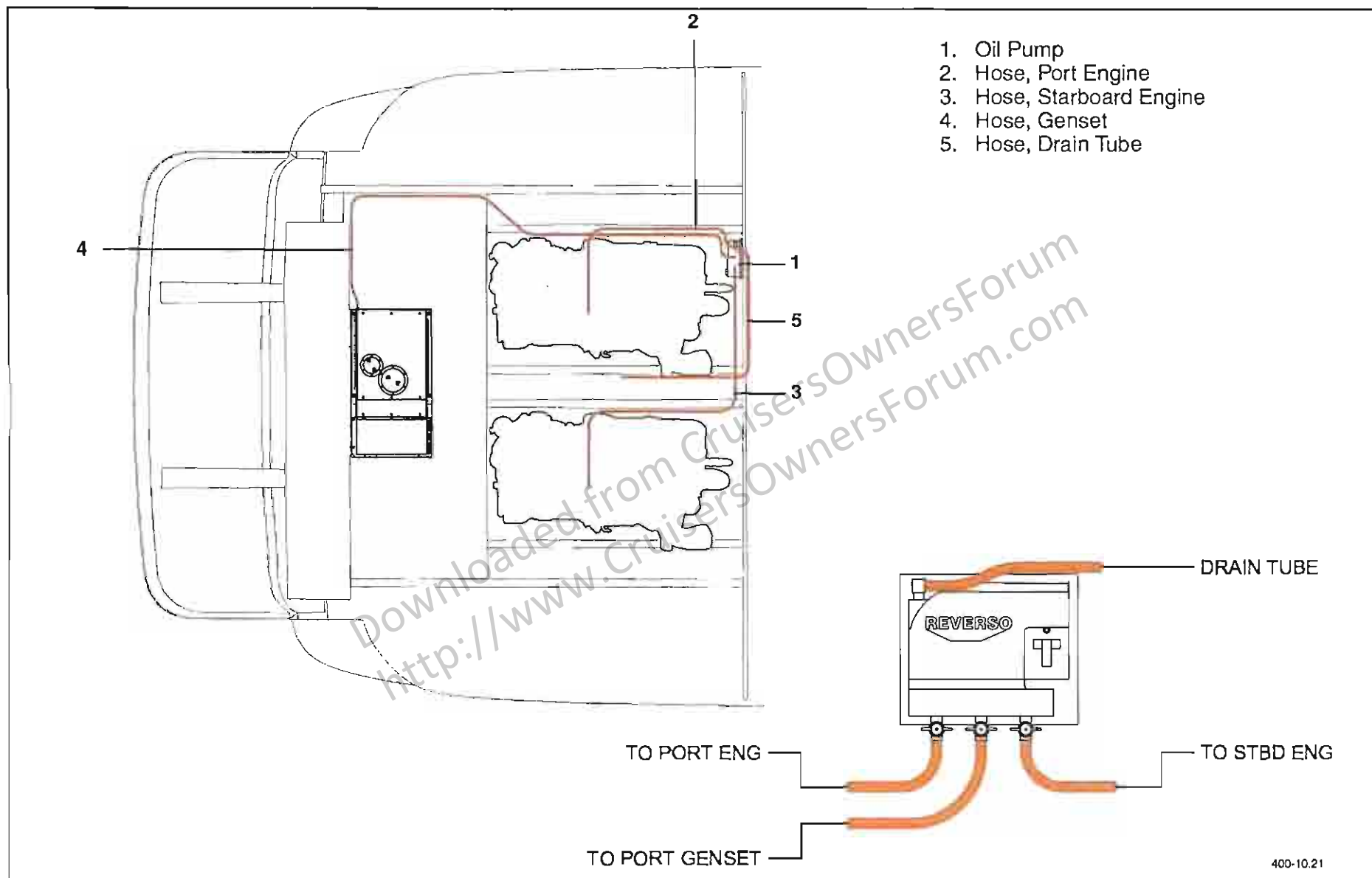


400-10-17



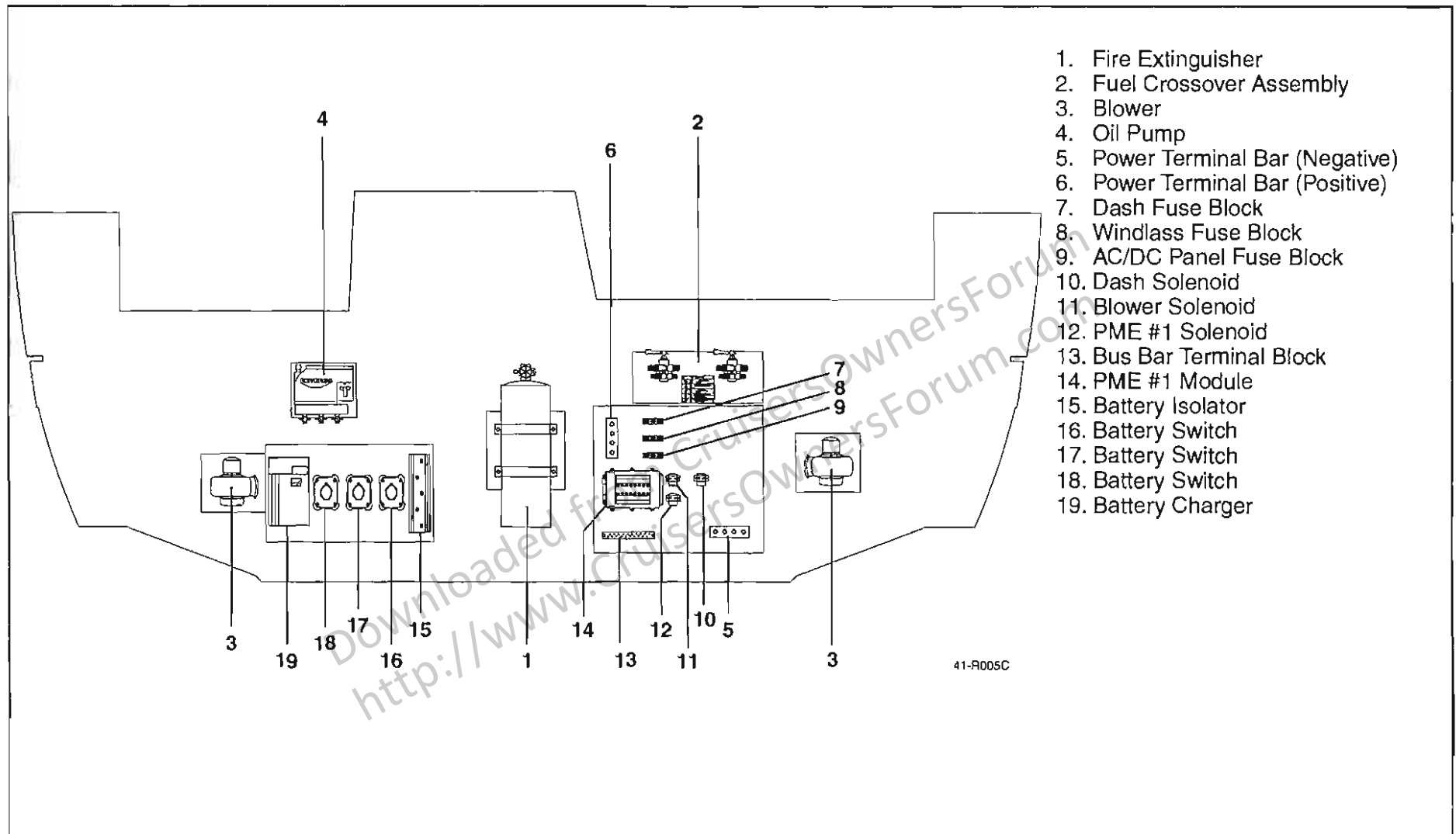
Section 2

OIL EXCHANGE LAYOUT





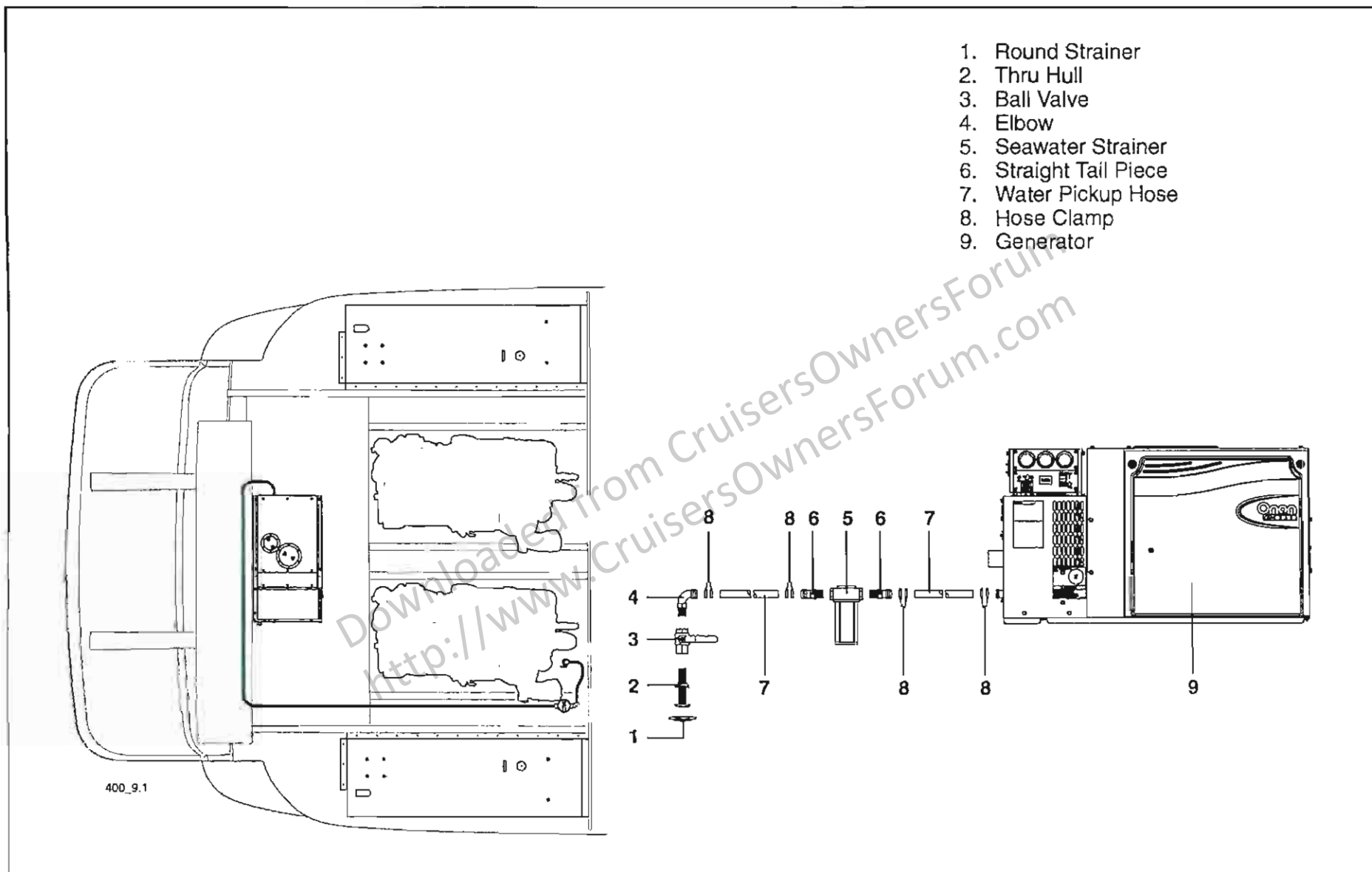
FORWARD ENGINE ROOM BULKHEAD (IPS)





Section 2

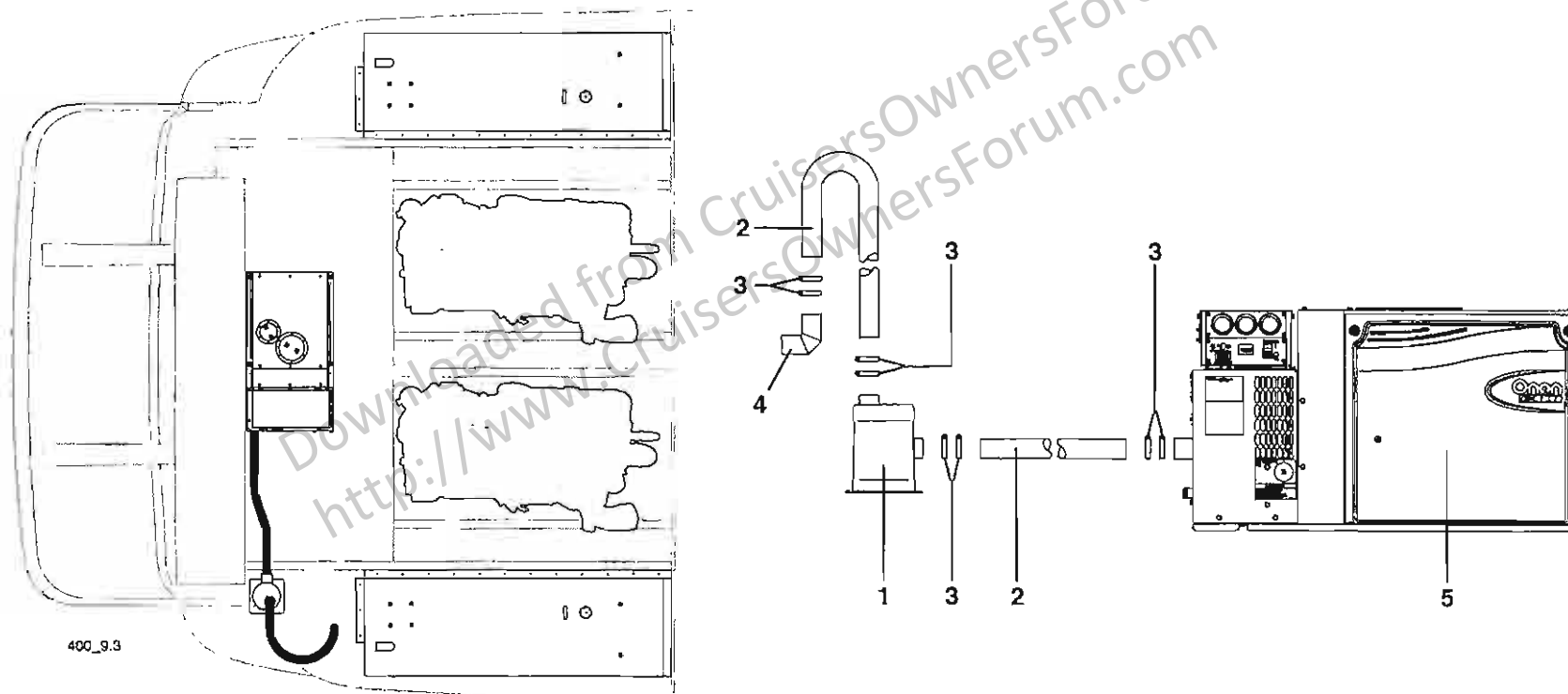
GENERATOR LAYOUT





GENERATOR LAYOUT (CON'T.)

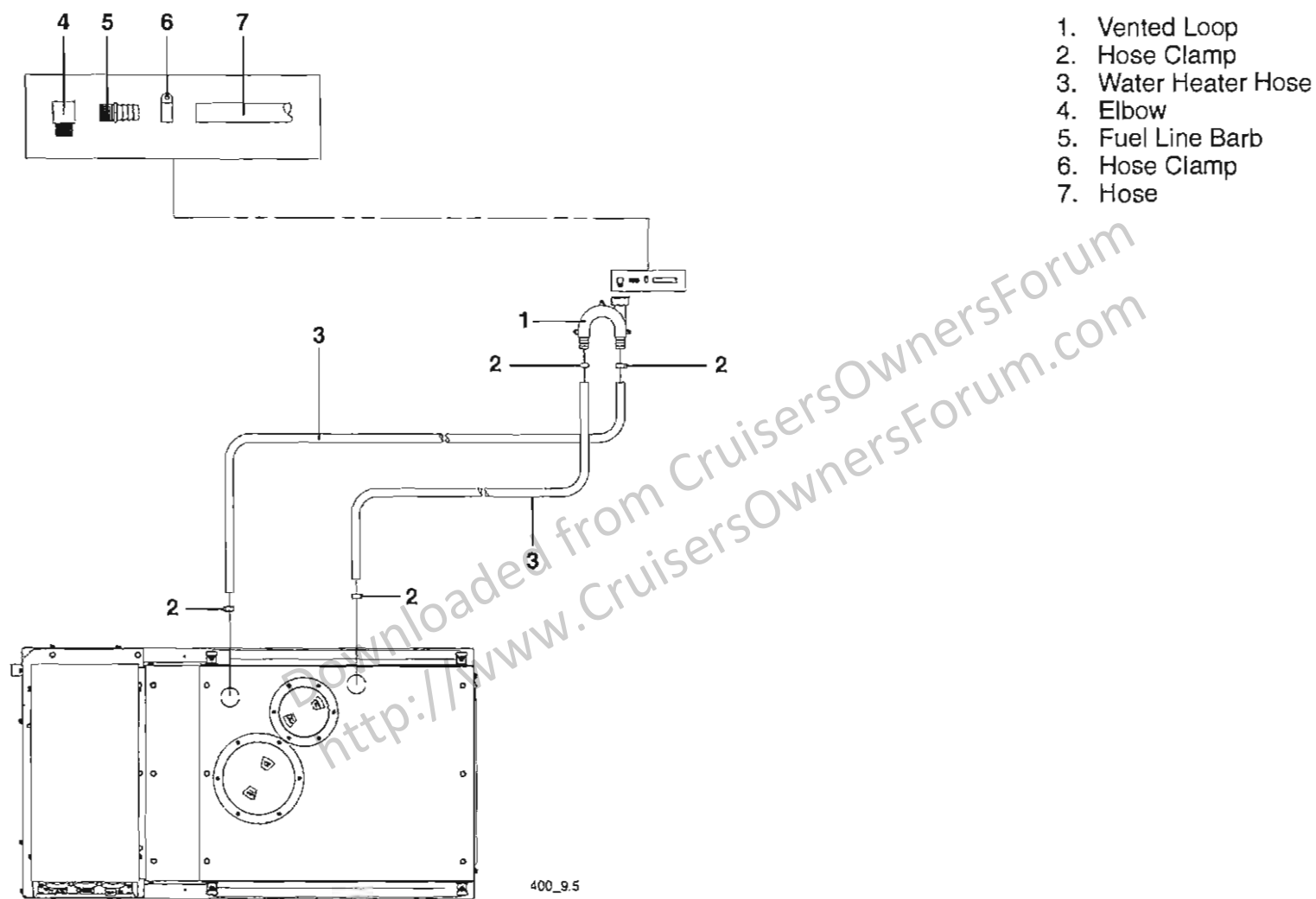
1. Muffler
2. Exhaust Hose
3. Hose Clamp
4. Exhaust Elbow
5. Generator





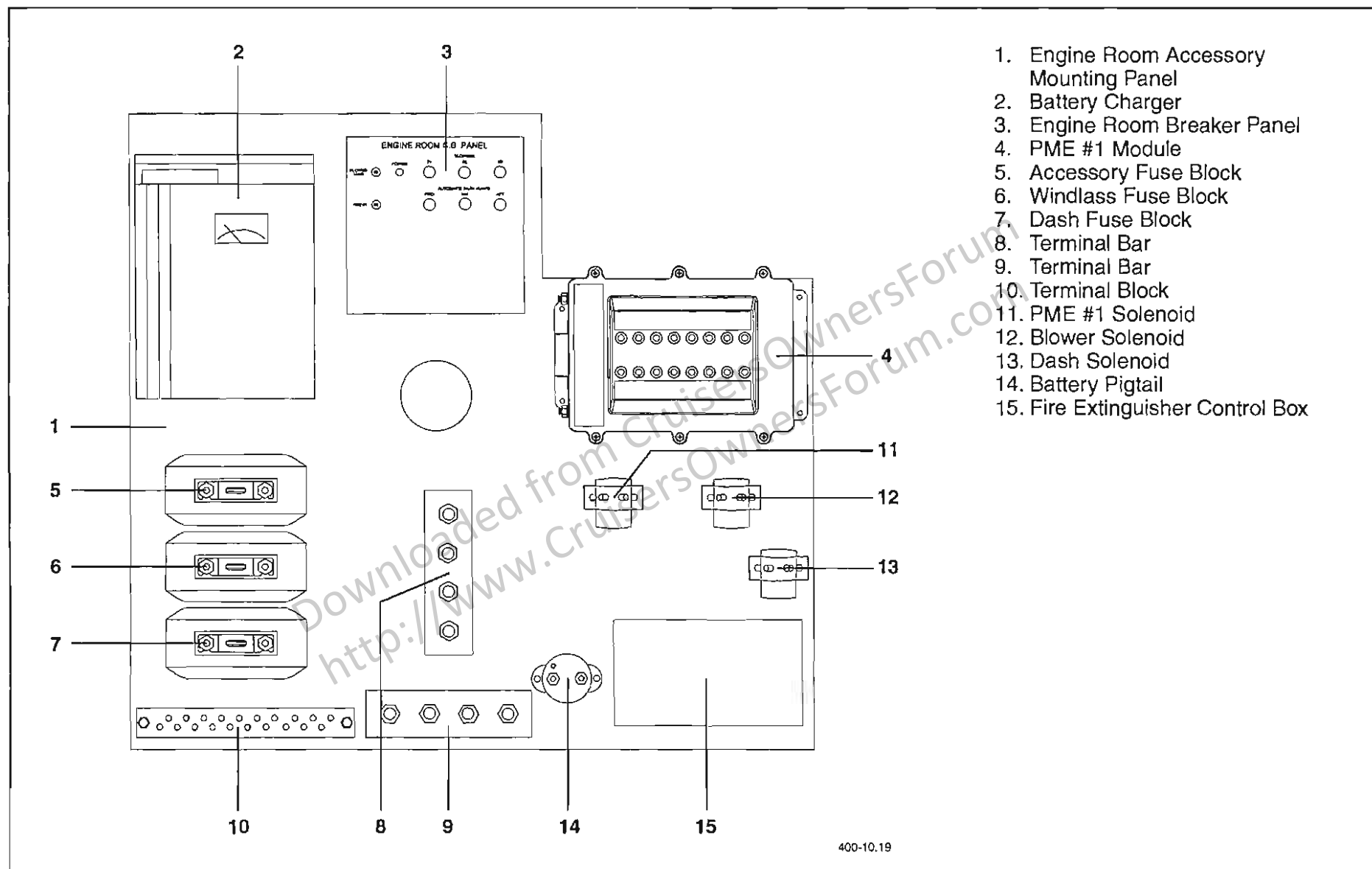
Section 2

GENERATOR LAYOUT (CON'T.)





ENGINE ROOM ELECTRICAL PANELS – YANMAR DIESEL

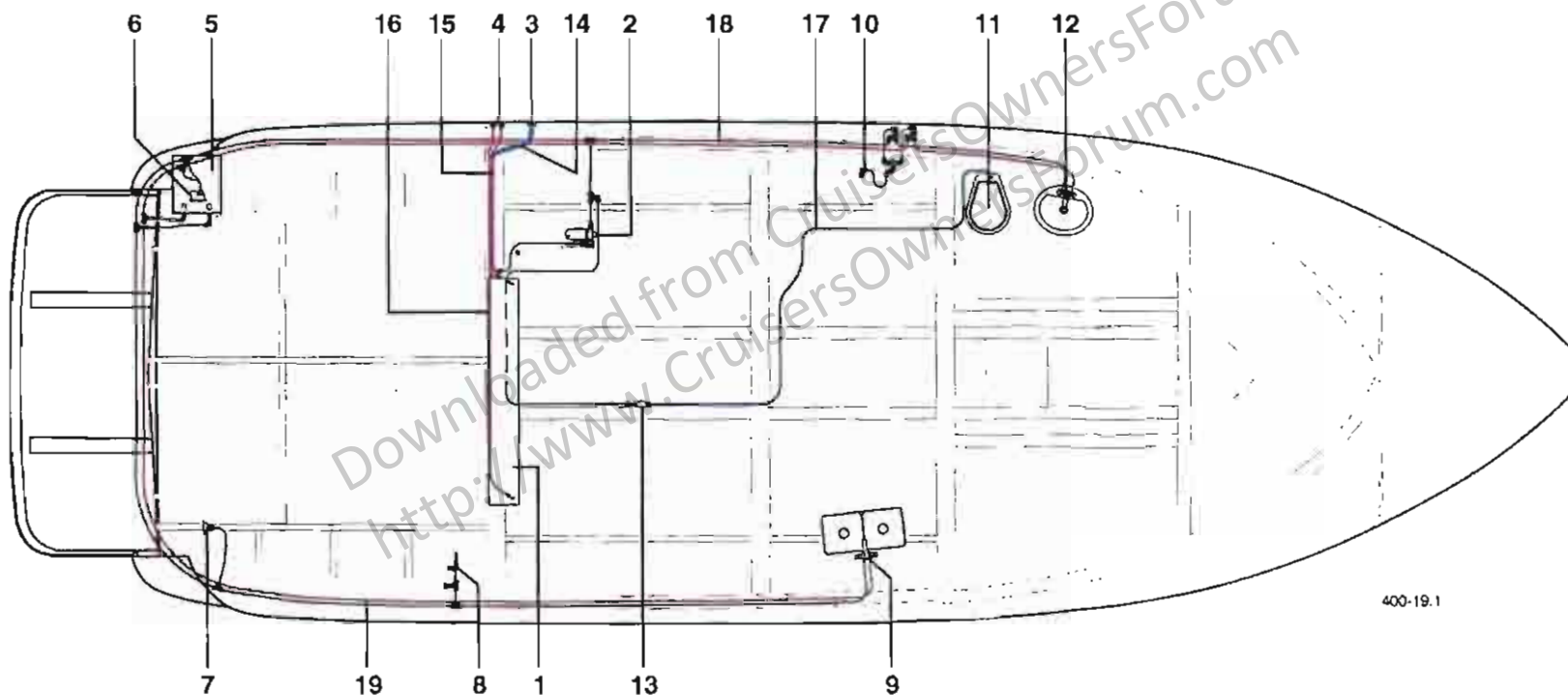




Section 2

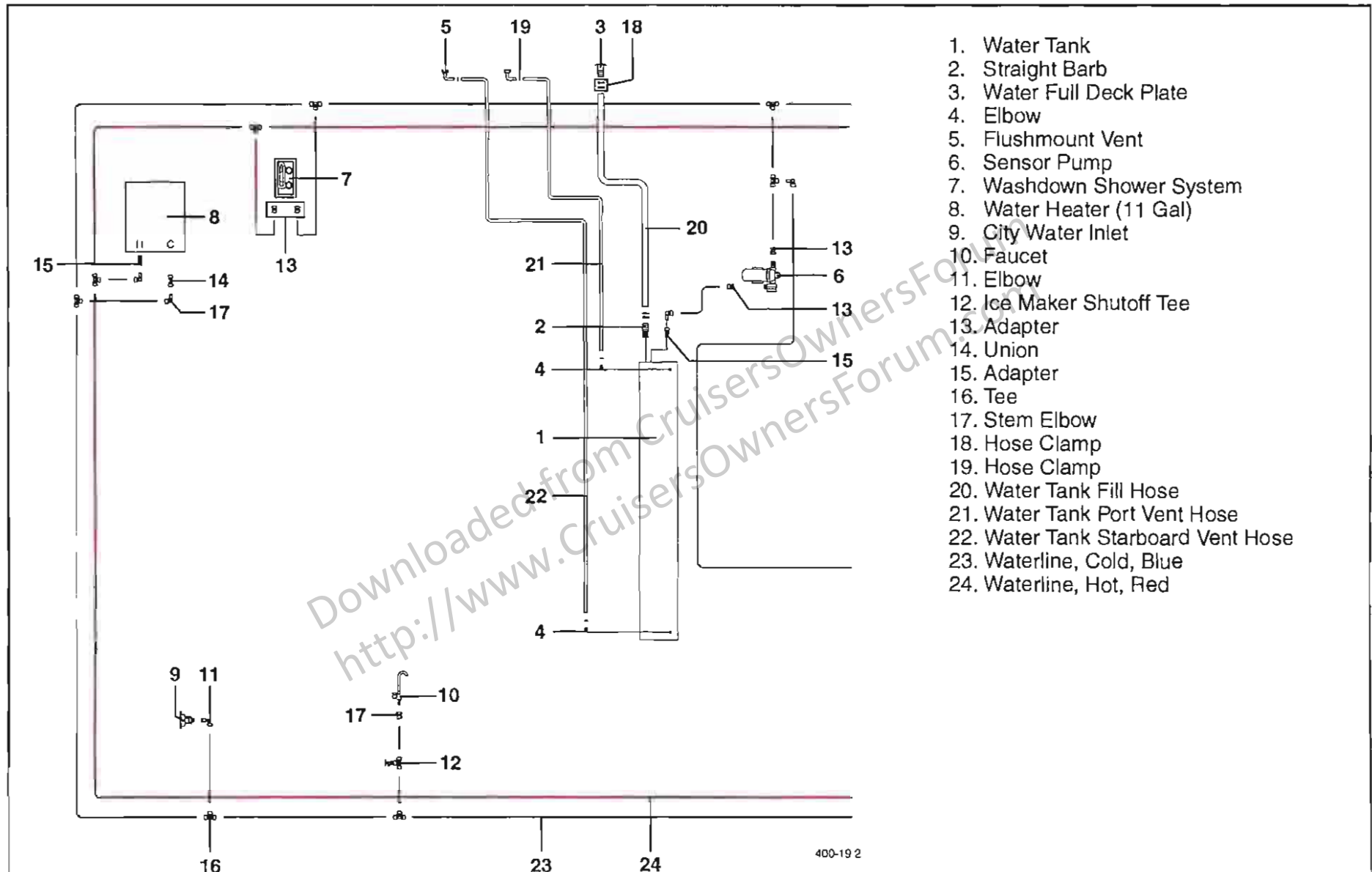
FRESH WATER LAYOUT

- | | | |
|---------------------------|--------------------------|------------------------------------|
| 1. Water Tank | 8. Cold Water Faucet | 15. Water Tank Port Vent Hose |
| 2. Sensor Pump | 9. Galley Faucet | 16. Water Tank Starboard Vent Hose |
| 3. Water Full Deck Plate | 10. Shower Mixer | 17. Head Water Hose |
| 4. Flushmount Vent | 11. Head Unit | 18. Waterline, Cold, Blue |
| 5. Water Heater (11 Gal) | 12. Head Faucet | 19. Waterline, Hot, Red |
| 6. Washdown Shower System | 13. Head Solenoid | |
| 7. City Water Inlet | 14. Water Tank Fill Hose | |





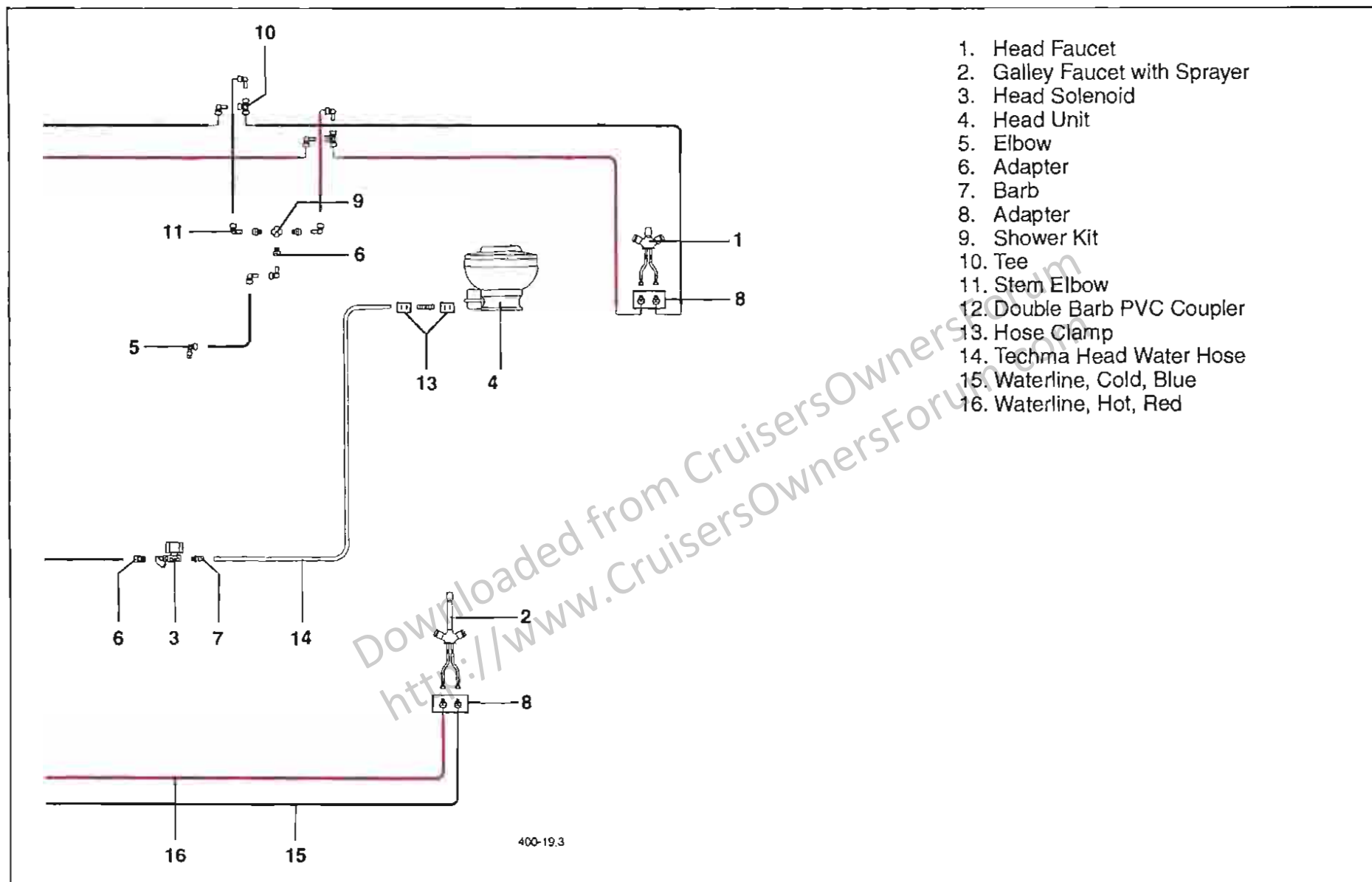
FRESH WATER LAYOUT (CON'T.)





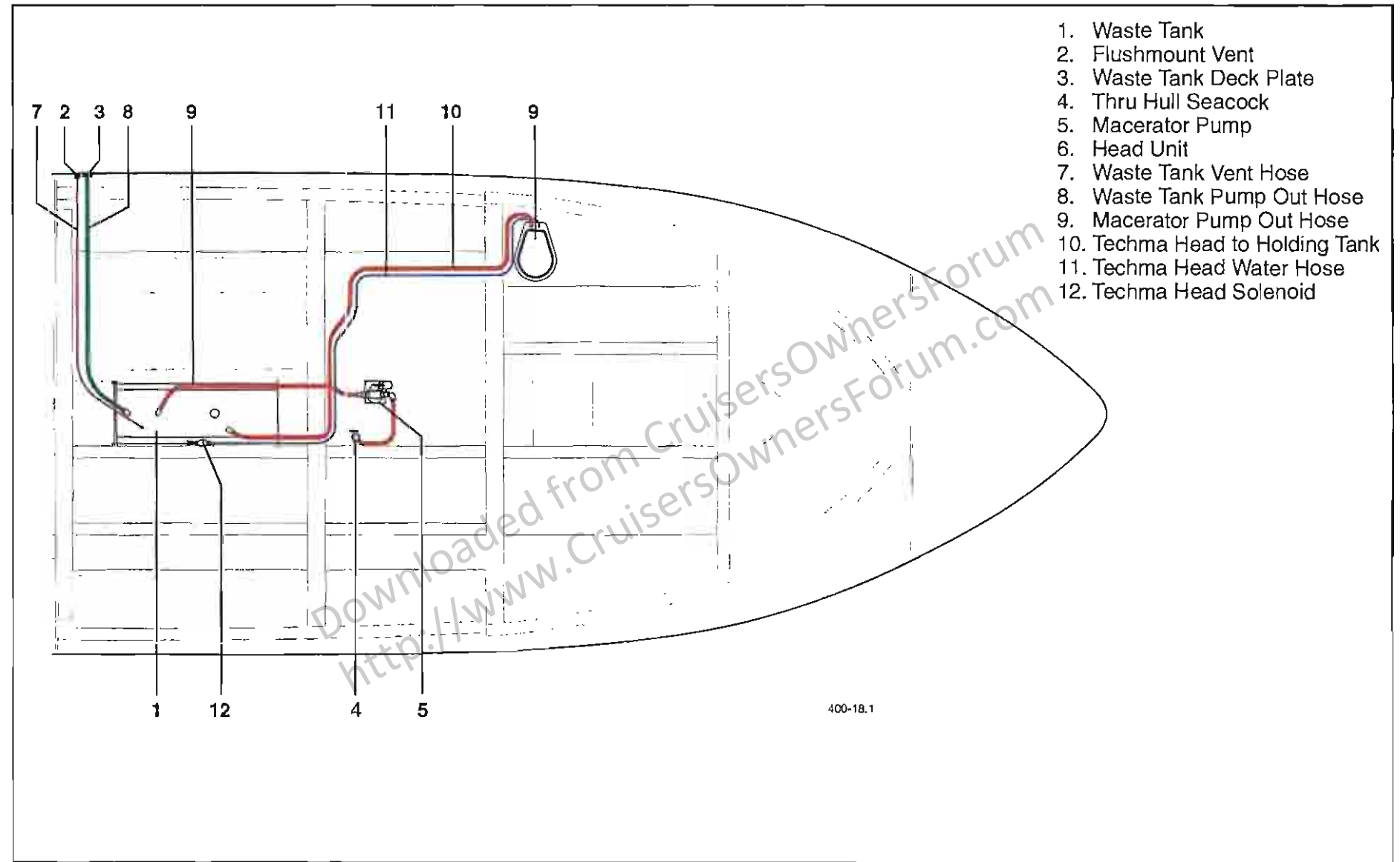
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FRESH WATER LAYOUT (CON'T.)





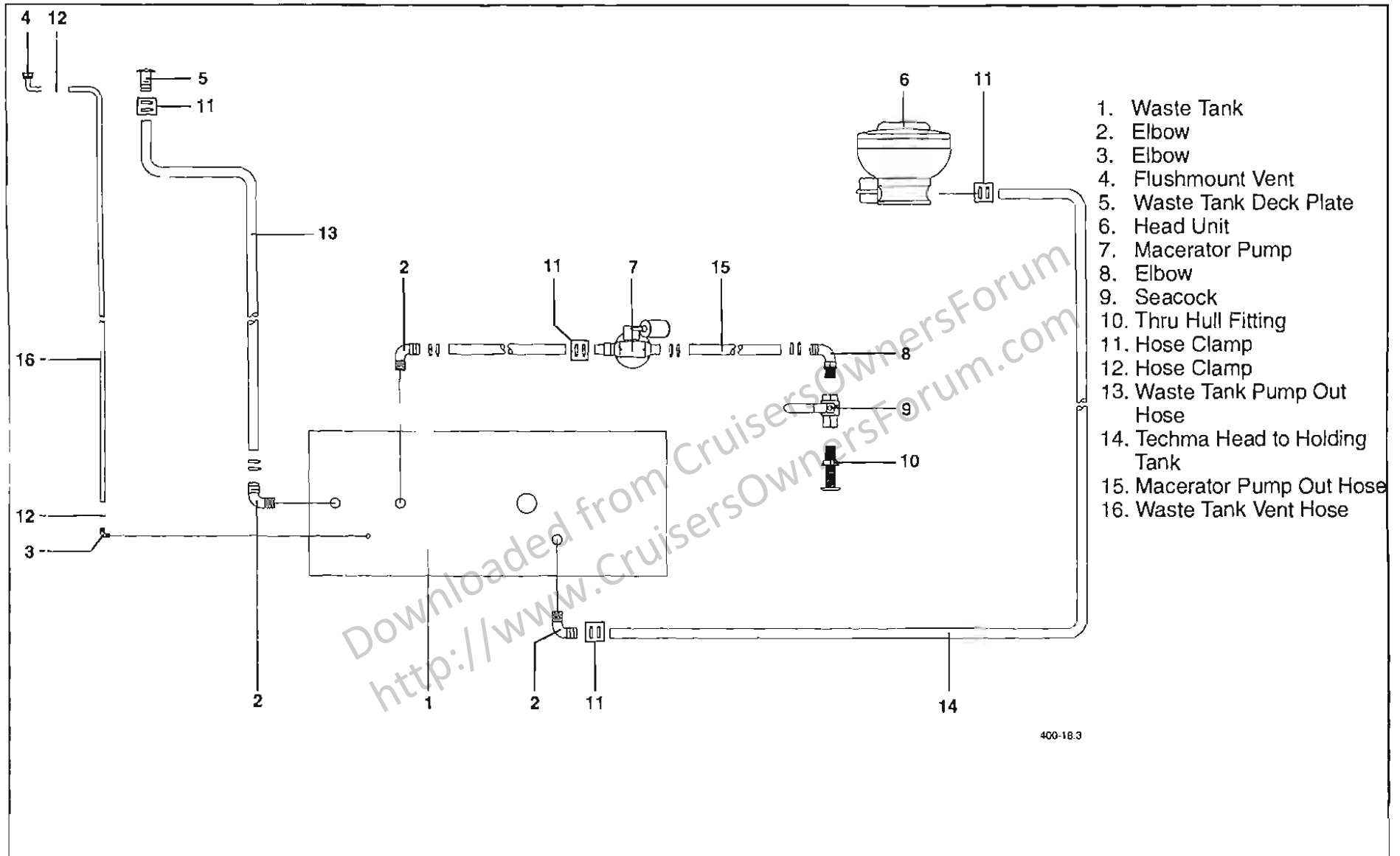
WASTE LAYOUT W/MACERATOR





Section 2

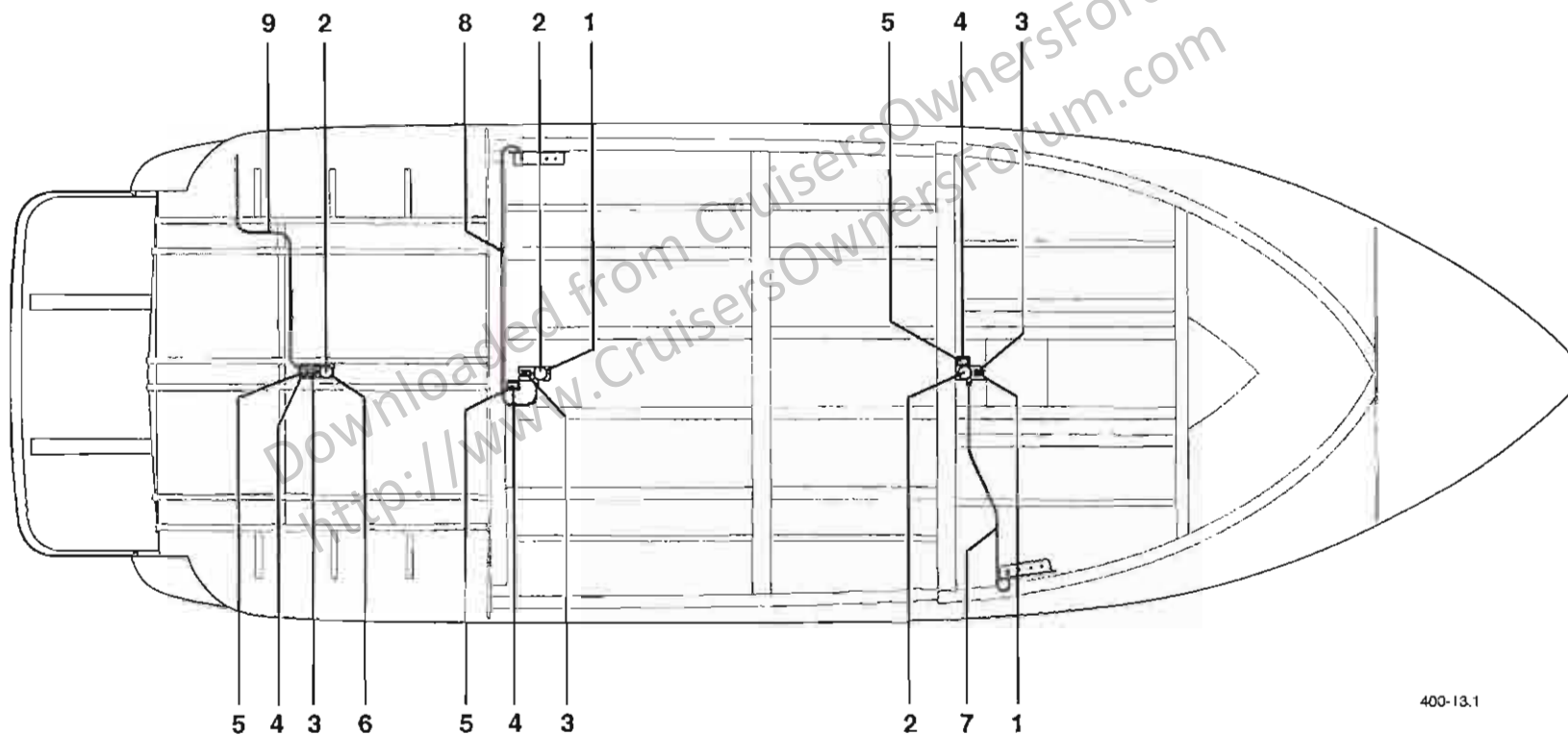
WASTE LAYOUT W/MACERATOR (CON'T.)





BILGE PUMP LAYOUT

- | | |
|---------------------------|--------------------------------|
| 1. Bilge Pump Bracket | 6. Bilge Pump Bracket |
| 2. Bilge Pump | 7. Forward Bilge Pump Out Hose |
| 3. Bilge Float Switch | 8. Middle Bilge Pump Out Hose |
| 4. Float Switch Bracket | 9. Aft Bilge Pump Out Hose |
| 5. Bilge High Water Alarm | |

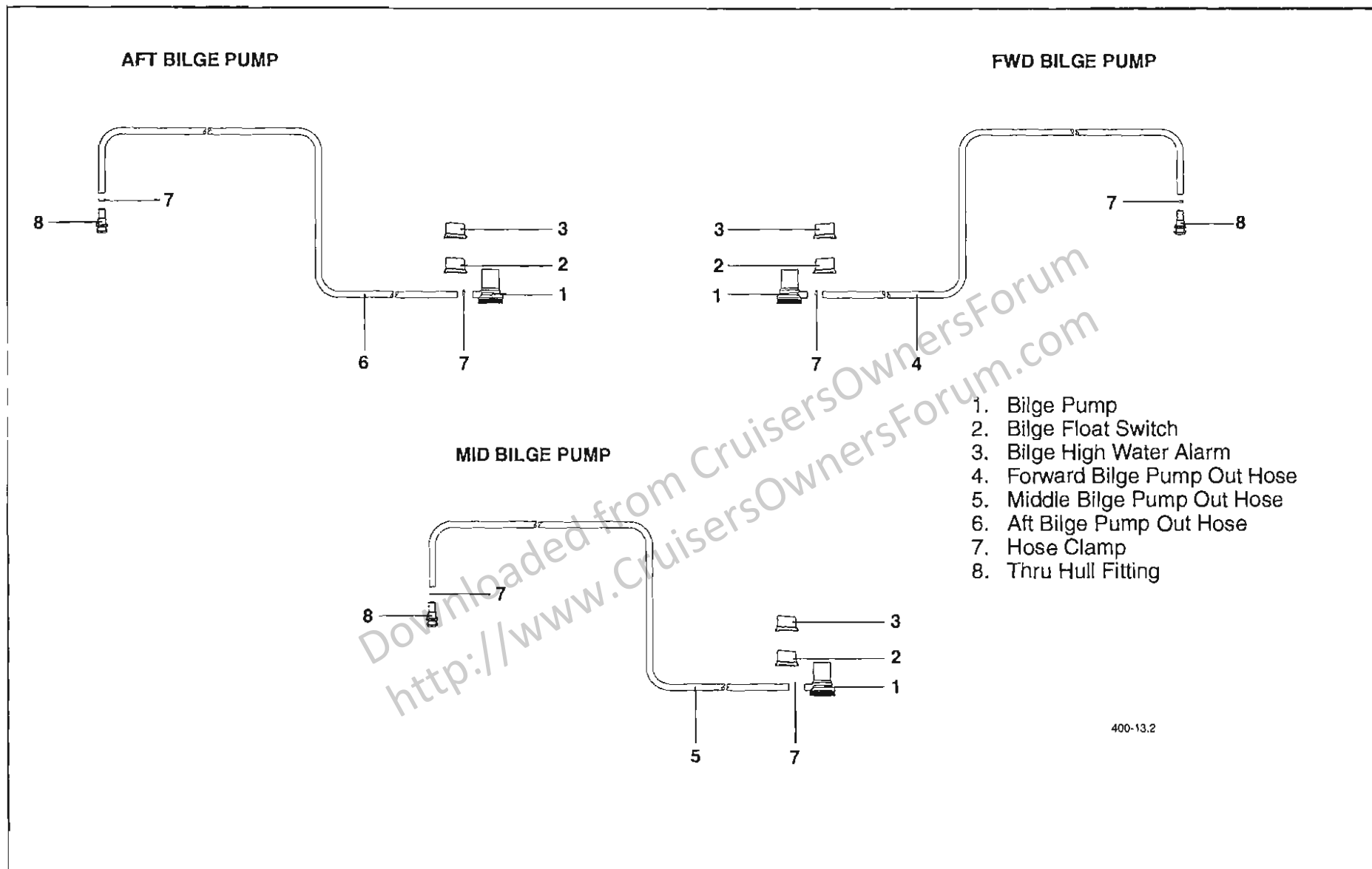


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Section 2

BILGE PUMP LAYOUT (CON'T.)





LIFTING AND STORING YOUR BOAT

CAUTION

DO NOT lift a yacht with a large amount of water in the bilge! Undue stress will be put on the hull that may cause damage which is not covered under the warranty.

Slings must never contact or exert a force on shafts, struts or hardware protruding from the hull. This type of stress can damage fiberglass, bend or misalign parts, which is not covered under the warranty.

Use two web slings and 13 ft (4 m) to 16 ft (5 m) spreader bars to lift the yacht based on the width of your yacht's beam. Refer to **SPECIFICATIONS**. Slings must have a minimum width of six inches and a capacity rating high enough to support the yacht. Spreader bars reduce the side pressure at the yacht's sheer line and prevent distortion or damage to the deck or gunwale molding.

Put slings around the hull at positions marked "SLING." The sling decal is located just under the gunwale molding. Make sure the sling contacts the bottom of the hull for the entire length with no twists in the sling.

When lifting the yacht, keep the bow slightly higher than the stern to keep water from running into engine manifold. Water can cause corrosion or damage to the engine.

CAUTION

When your yacht is out of the water, it is important to support the hull correctly to avoid any hull damage.

The shipping/storage-cradle will provide the proper support at the recommended positions. The load at the cradle support areas is less than 10 pounds per square inch. Make sure the cradle is level and completely supported on the ground to eliminate any cradle or hull distortion. Contact your Cruisers Yachts Dealer to order a cradle.

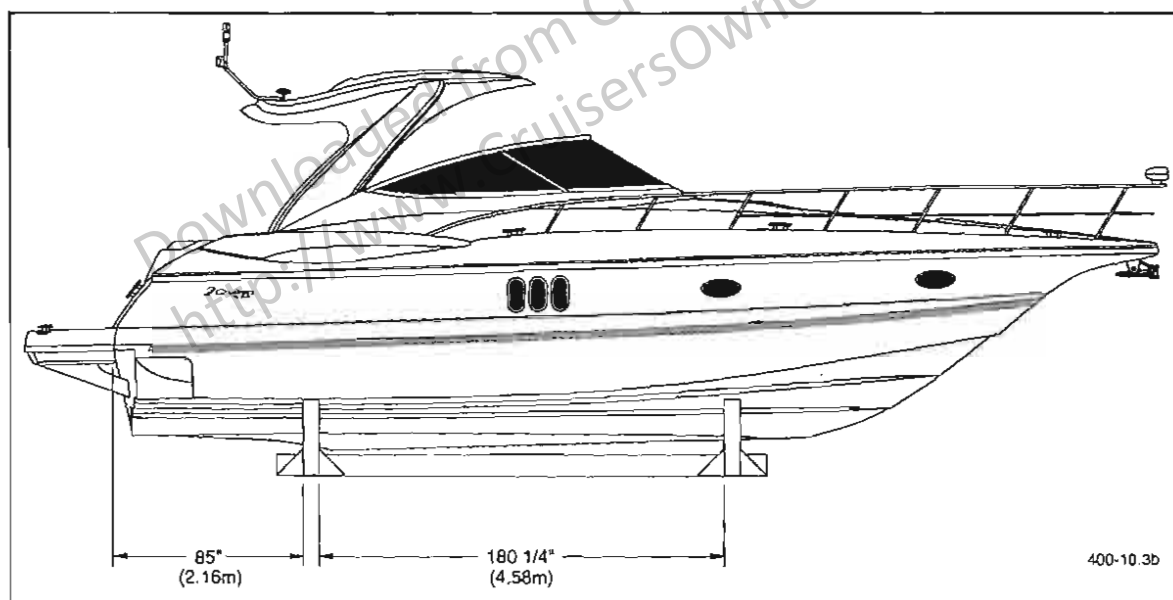
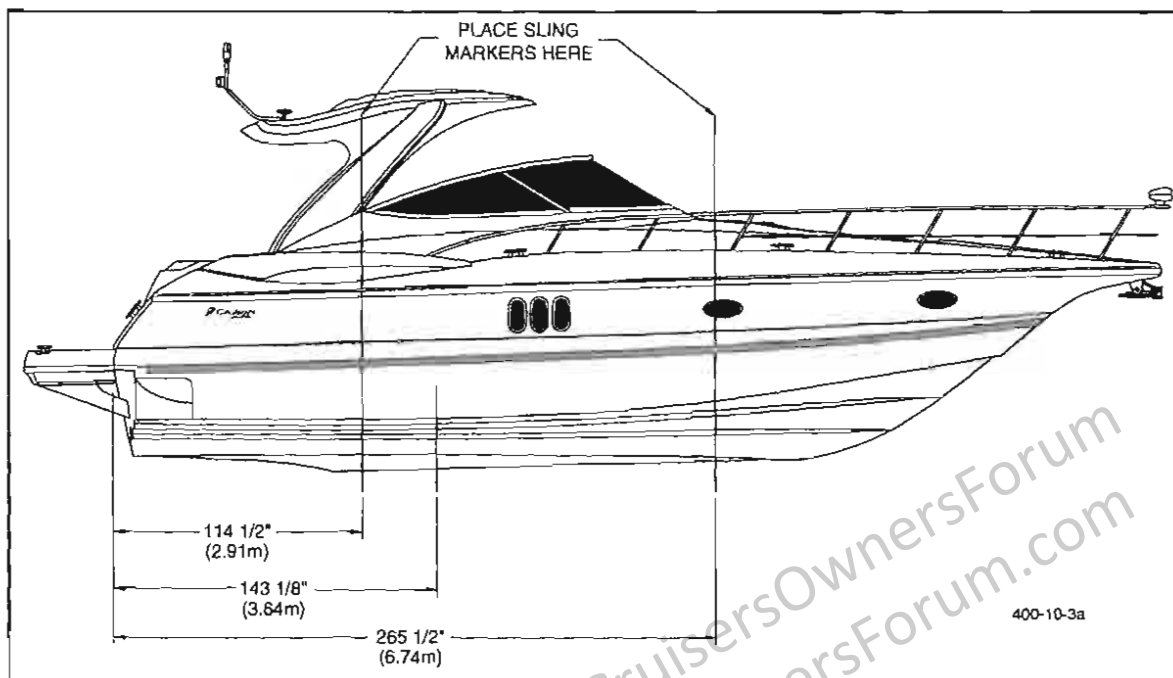
If a factory-supplied cradle is not available, use extreme care to support the hull as shown. Do not support yacht by resting hull on keel; the load will be more than 10 pounds per square inch! Vertical supports must extend from chine to keel to chine with no gaps between the hull and cradle supports. Protect all items extending from the hull from resting on the support or ground. **DO NOT** apply any load stress to propellers, shafts, rudders, struts or drive systems.

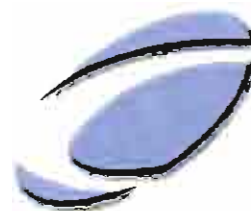
If a cradle can not be used, use foam blocks on the keel and jackstands on the chine.

For more information on storing your yacht, refer to **STORAGE AND EXTENDED LAY-UP** in **Section 8** of the **Getting Started** manual.



Section 2





Section 3

Controls and Indicators

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Section 3

DASH PANEL LAYOUT

1 - FUEL GAUGES

IMPORTANT

Do not rely on the accuracy of gauges. Readings are only approximate and should always be compared to the hours of use multiplied by the known fuel consumption (GPH).

These gauges indicate the approximate amount of fuel in each tank.

2 - ENGINE BUZZER

Works in conjunction with the Volvo EDC (Electronic Diesel Control): an electronically controlled processing system.

3 - DEPTH FINDER

4 - ENGINE ALARM DISPLAY

Works in conjunction with the Volvo EDC.

5 - EDC DISPLAY

Monitors and displays engine and boat functions.

6 - SEARCHLIGHT CONTROLS

The searchlight is controlled from a joystick.

SELECT S - slow light movement.

SELECT F - fast light movement.

DIRECTIONAL MOVEMENT - The joystick is moved left, right, forward and aft to move the light beam.

7 - STEREO REMOTE

This remote control allows the stereo to be controlled from the helm station. The primary controls for the stereo are located in the galley.

8 - SEAKEY™ EMERGENCY PANEL

See the SeaKey owner's manual that is included in the Skipper's Kit for a detailed description of the functions.

9 - 12 VOLT ACCESSORY SWITCH PANEL

These switches are toggle action switches that control the accessory designated to the switch. When a switch is pressed, the accessory power will turn ON. When the opposite end is pressed, the accessory power will turn OFF.

10 - FIREBOY ALARM

The display unit has an indicator lamp to indicate fire suppression automatic fire extinguisher status. The lamp should glow when the ignition switch is in the ON position indicating a charged system. Should the system discharge, the lamp will not glow. Refer to the Fire Suppression owner's manual in the Skipper's Kit for complete details.

11 - DASH BREAKER PANEL

Circuit breaker panel to reset the accessory designated to the breaker. Resetting a circuit may not cure a problem. If the circuit continues to trip, refer the problem to your Cruisers Yachts Dealer.

CAUTION

DO NOT reset a breaker which continues to trip without first discovering and remedying the cause of the problem.



12 - VHF RADIO

Refer to the VHF Radio owner's manual in the Skipper's Kit for complete details.

13 - VOLVO ELECTRONIC DIESEL CONTROL

See the Volvo Electronic Diesel Control owner's manual that is included in the Skipper's Kit for a detailed description of the functions.

14 - HIGH WATER ALARM

The alarm will sound when the high water alarm float switch is activated.

15 - THROTTLE CONTROLS

The throttle control lever for the port engine is the port side lever and the throttle control lever for the starboard engine is starboard lever. NEUTRAL is at the center, FORWARD is forward (away from you) one detent and REVERSE is aft (toward you) one detent. Gradually push forward to go into FORWARD and continue to push forward to increase engine speed. Gradually pull aft to go into REVERSE and continue to pull toward you to increase engine speed. Always return the controls to NEUTRAL when the engines are not running.

16 - TRIM TAB CONTROLS AND INDICATORS

NOTE

Push the trim tab rocker switches in half second bursts. Holding the rockers down too long will over trim the boat.

The trim tab switches are used to correct the trim of your boat while you are underway.

- To trim the bow of your boat down, push the top halves of both switches.
- To trim the bow of your boat up, push the bottom halves of both switches.

Refer to SUGGESTED MANEUVERING TECHNIQUES in **Section 6** of the **Getting Started** manual.

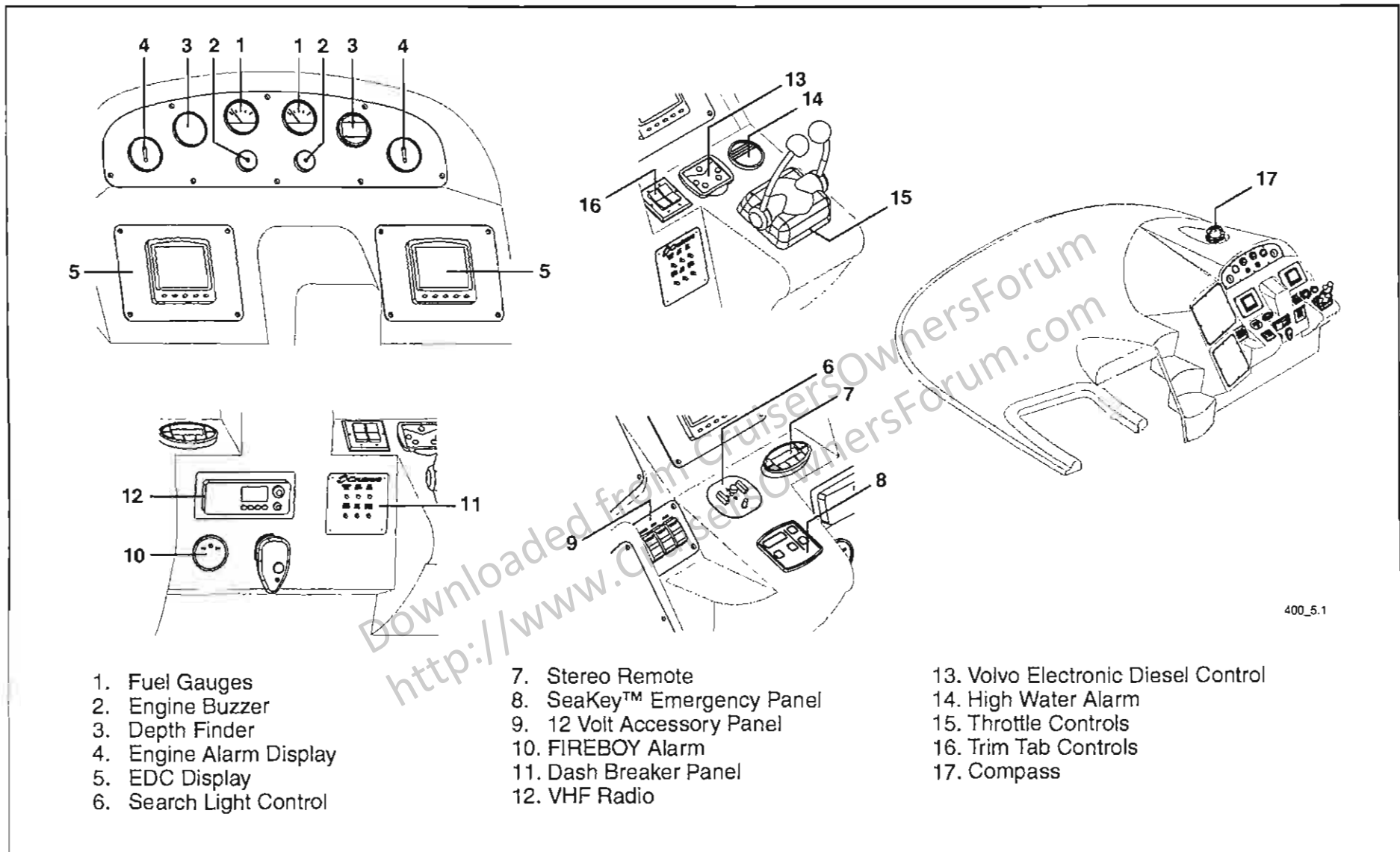
17 - COMPASS

The compass has not been compensated. The compensating should be performed by a qualified compass adjuster. After the compass has been adjusted, DO NOT allow any iron or steel objects to be placed in its vicinity - even temporarily. Refer to the owner's manual included in the Skipper's Kit for detailed information.



Section 3

HELM CONTROLS (VOLVO DIESEL)





KEYPAD SWITCH FUNCTIONAL DESCRIPTION

KEYPAD LAYOUT

1 - HORN

The HORN button is a momentary button controlling the horn. The horn will sound as long as the button is pressed.

2 - AFT/MID/FWD PUMP

These three buttons are toggle action buttons, push to turn ON, push to turn OFF. They control the respective pumps. The indicator LEDs will illuminate when power is being supplied to the corresponding pump.

3 - PORT/STARBOARD WIPER

These are toggle action buttons that control the wipers. Pressing a button will turn ON a wiper in the low speed mode. Pressing it a second time will turn it ON in the high speed mode. Pressing it a third time will turn the wiper OFF and park the wiper. The LEDs indicate if the wiper is ON and the speed mode of the wiper.

4 - PORT/STARBOARD WASHER

The WASHER button is a momentary action. The washer will stay on as long as the button is pressed. If a wiper(s) is not ON, the WASHER button will energize the wiper in low speed. The system has an off-delay function for the wiper(s) that were energized by the WASHER button allowing the wiper(s) to stay ON for several cycles and then park. If a wiper was ON prior to the washer cycle, it will remain on at its commanded speed both during and after the washer cycle.

5 - SPREADER/ENGINE ROOM LIGHTS

These buttons are toggle action buttons that control the corresponding lights. When a button is pressed, the corresponding light(s) will turn ON. When it is pressed again, the light(s) will turn OFF.

6 - ANCHOR/NAV LIGHTS

Pressing the ANCHOR/NAV light button turns ON the NAV light. Pressing it a second time turns the NAV light OFF and the ANCHOR lights ON. Pressing it a third time turns them both OFF.

7 - COCKPIT LIGHTS

The cockpit lights can be controlled from the keypad or from the transom and salon momentary switches.

Pressing the COCKPIT lights button will turn the cockpit lights ON. Pressing this button while the lights are ON will start a five minute timer. After the five minute time elapses, the lights will automatically turn OFF. Pressing the button while the cockpit lights are in the timer state will turn the lights OFF. If the lights turn OFF due to the five minutes elapsing, and the button is pushed again, the lights will turn ON, repeating the cycle. The cockpit lights are also controlled by momentary rocker switches that are located at the transom and salon entrances. These switches emulate the keypad COCKPIT lights button logic.

8 - BOARDING LIGHTS

The boarding lights can be controlled from the keypad.

The boarding lights will toggle ON when the BOARDING button on the keypad is pressed. They will toggle OFF when the button is pressed again.



Section 3

9 - ENGINE ROOM FANS

This button has a toggle action. Push the button to turn the fans ON, push it again to turn the fans OFF.

10 - WINDLASS POWER

The WINDLASS POWER button is a toggle action function. Push the WINDLASS POWER button to turn windlass power ON. The indicator will turn ON when windlass power is ON. When the windlass power indicator is ON, pushing the up or down arrows will cause the windlass to go up or down.

11 - BATTERY PARALLEL

This is a momentary function that controls the battery parallel solenoid. When this button is pressed, the battery parallel solenoid is energized, connecting the two cranking batteries in parallel. When it is released, the solenoid is de-energized. This function should be used only when one of the cranking batteries is not charged sufficiently to start the corresponding engine.

12 - KEYLESS OPERATION

Security is provided by using a keyless control to enable engine functions. Key in the four-digit user code followed by the ENTER button. The ENTER button also serves as a reset button if an error is made entering the four-digit code. Simply press the ENTER button and start over.

IMPORTANT

Each key press must be within three seconds of each other or the keypad will reset.

13 - ENGINE IGNITION START/STOP

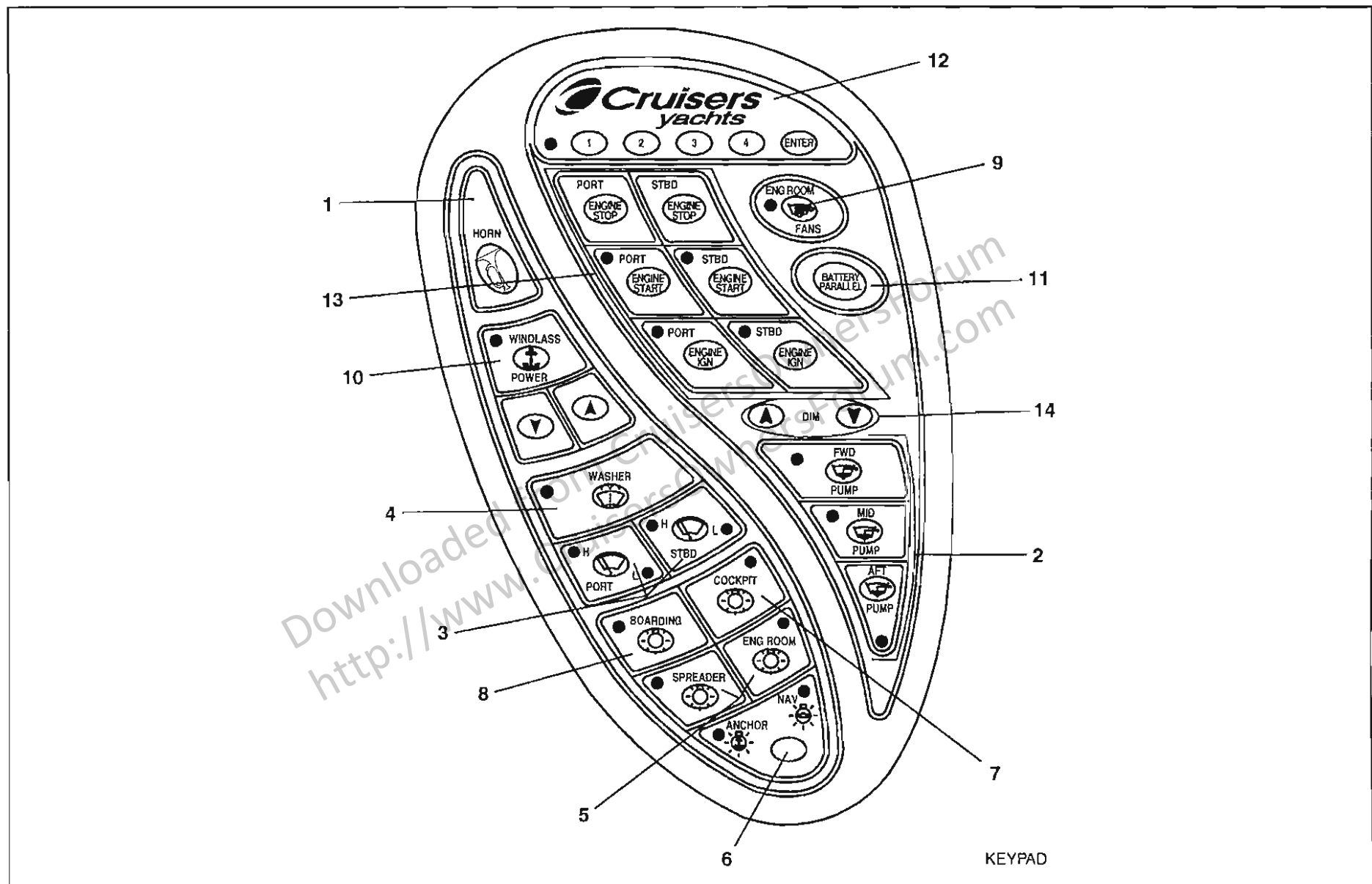
Successfully entering the correct four-digit user code and pressing the ENTER button will unlock the ignition system. At this point the PORT and STBD ENGINE IGN buttons are enabled (active). When the system is unlocked, a 15 minute timer begins. When the 15 minutes elapses, the system will automatically lock if no further ignition function buttons are pressed. Pressing either engine ignition button will toggle the corresponding master engine ignition relay ON, and its indicator will light.

14 - DIM

The DIM arrows control the light level of the keypad LEDs and back-lighting, and other helm lights. Pressing the up arrow will increase the light level. Pressing the down arrow will decrease the light level.



KEYPAD





Section 4

Basic Systems Operation

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Section 4

POWER TRAIN

Engines

Your yacht is powered by twin inboard engines. All operation, specification and maintenance information is contained in the engine owner's manual. Find this manual, which is located in the Skipper's Kit, and familiarize yourself with it. The engine is the heart of your yacht and following the manufacturer's recommendations will provide you with continued boating pleasure.

INBOARDS

The power generated by the engine is transmitted to the propeller via the transmission, shaft coupling, and the propeller shaft assembly. The propeller shaft is supported and aligned with the engine by a throughhull shaft log and an outside strut.

IPS ENGINES

The IPS (Integrated Propulsion System) is a fully integrated propulsion system. The controls, propulsion, rudder and steering system are all integrated. The engine's power is transferred through the hull and into the IPS.

COOLING SYSTEM

CAUTION

The cooling system starts at the cooling water seacock, which can be shut off for a number of reasons. Make sure the seacocks are open before starting engines. The absence of cooling water will cause the engines to overheat and cause irreparable damage.

Each engine is cooled by seawater entering the yacht through a seacock in the hull bottom. The water enters the engine through the engine water jacket and is returned to the sea through the exhaust system.

A feature which is standard on diesel engines is the fresh water cooling system. This system uses the incoming seawater to cool a secondary closed-cooling system. The seawater flows through an engine mounted heat exchanger, cools the closed system coolant, and is returned to the sea via the exhaust system.

ALARM SYSTEMS

Alarm systems are on all boats. The alarm will sound under the following conditions:

- Engine temperature exceeds specified limits
- Engine oil pressure drops below specified limits
- Transmission oil temperature exceeds specified limits
- Ignition switches are ON, engines are OFF

To test the alarm system, turn the ignition switch to the ON position. Depending upon the engine, the alarm may sound immediately, or after a few seconds delay.

Engine Ignition Starting/Stopping - Key Switch

Your Cruisers Yacht may be equipped with key switch STARTING/ STOPPING switches. This type switch works on the same principle as an automobile. Refer to the Engine owner's manual in the Skipper's Kit for complete details.



Engine Ignition Start/Stop - Keypad

Successfully entering the correct keyless code then pressing the ENTER button will unlock the system. At this point the PORT ENGINE IGN and STBD ENGINE IGN buttons are enabled. When the system is unlocked, a 15 minute timer begins. If the system senses that either or both engines are running or rotating during the 15 minute period, the timer is reset and turned OFF. If neither engine starts during the 15 minute period, the system will lock. It will then be necessary to re-enter the user code to unlock the system and enable starting the engines.

With the system unlocked, pressing either ENGINE START button will toggle the corresponding master engine ignition circuit ON, and the corresponding indicator will light. The 15 minute counter is reset each time one of the six buttons which control the engine ignition is pressed. When the 15 minute time elapses and the tachometer inputs are not detecting button activity or an engine running, the system will automatically turn the master ignition circuits OFF and lock the system.

If an ENGINE START indicator is ON the corresponding ENGINE START button is enabled. The ENGINE START indicator will light when the engine tachometer signal is sensed, indicating engine rotation. It is important to note that the indicator does not indicate when the engine is successfully started but simply that the crank shaft is rotating. The indicator will remain ON as long as the system is receiving the signal from the engine tachometer. At this point the 15 minute timer and further actuation of the engine ignition button is disabled. The 15 minute timer is disabled as long as one or both engines are running. If both engines are not running and none of the ENGINE START/IGN buttons are pressed, the timer is restarted and the system will lock when the 15 minute time elapses.

When an engine is running, pressing and holding the ENGINE STOP button will turn the corresponding master engine ignition OFF. The ENGINE STOP button is a momentary button and needs to be held in until the engine is stopped.

The system can be locked, only if the engines are OFF, by entering either the user code or the master codes correctly and pressing the ENTER button. The system will automatically lock after the 15 minute time out period, if no engine rotation occurs. The engine ignition circuits that are ON at this time will automatically be turned OFF.

REPROGRAMMING THE USER CODE

The following is a description of how to program/reprogram the four-digit user code.

1. Type in your four-digit code. Caution: DO NOT press ENTER.
2. Simultaneously press 1 and 4. If the code was entered correctly, the LED, adjacent to 1, will blink approximately twice a second, otherwise the LED will remain off.
3. Type in the new four-digit code, first to enter the code then to verify, without pressing the ENTER button in between. Example: If the desired code is 1, 2, 3, 4 then the user will type in 1, 2, 3, 4, 1, 2, 3, 4. If done correctly when pressing the final verification digit the system will unlock and the unlock LED will remain illuminated.

Caution: Each key press must be within three seconds of each other or the keypad will reset.



Section 4

IPS

The IPS is a fully integrated propulsion system. The engine is located in the yacht (inboard) and the propulsion system, on the hull. Power from the engine is sent through the hull into the transmission and then into the propulsion system. The steering system turns the propulsion and rudder system to change the direction of thrust from the propellers. The control systems on IPS are all integrated.

Transmission

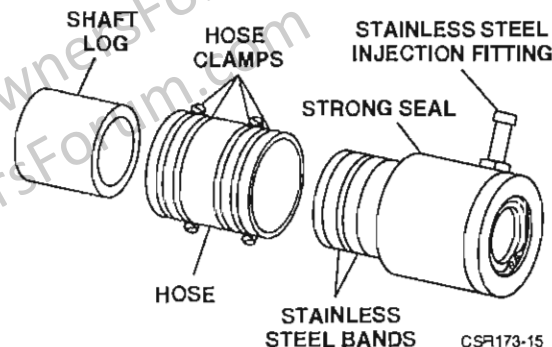
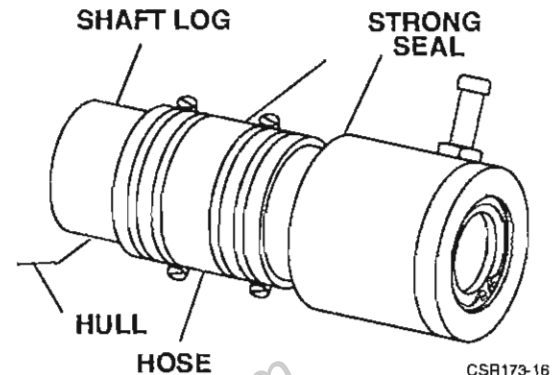
Through a series of gears, the transmission transmits the motive force of the engine to the propeller. The transmission has one forward and one reverse speed, and is shifted by the transmission selector on the dash. All the operation, specification and maintenance information is contained in the engine owner's manual.

Shaft Assembly - Inboards

This assembly makes it possible for the shaft to penetrate the hull bottom without allowing water to enter around the joint. The shaft coupling is the connecting point between the engine and the shaft assembly.

SHAFT LOG - INBOARDS

The shaft log is laminated to the hull. Rubber hose is clamped to the shaft log and to the shaft seal. The flexibility of the rubber hose allows it to absorb minor engine shock, such as moving from forward to reverse, while maintaining a watertight seal on the shaft log and the shaft seal.



SHAFT SEAL - INBOARDS

CAUTION

The shaft seal and rubber tubing should be inspected monthly for wear, leakage and deterioration. Excessive water entry, especially if unattended, could result in the submergence of the engine compartment, or of the entire yacht.

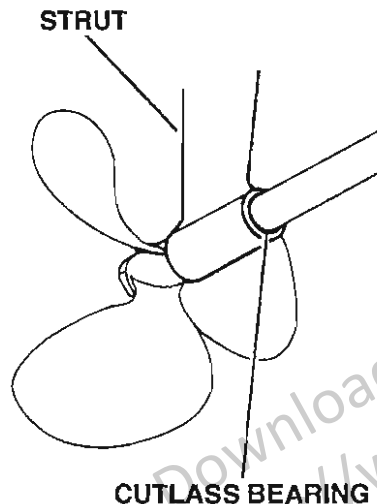


Strut and Cutlass Bearing - Inboards

⚠ CAUTION

The cutlass bearing is water lubricated. Running the propeller out of the water could result in bearing failure and damage to the shaft.

The propeller shaft is supported on the outside of the hull by a strut. The strut is equipped with a water lubricated plastic bearing that permits free rotation of the propeller shaft.



CSR161-7A

Propellers

⚠ CAUTION

Propellers can be very sharp. Be careful when you handle them. Wear protective gloves when handling any propeller. Remove the key from the ignition switch and remove the Emergency Stop Switch Clip, if you yacht is equipped with stop switches, to prevent accidental starting of the engines. Do not use damaged propellers. Damaged propellers can damage your engine and boat.

The propellers installed on your yacht were selected because their diameter and pitch provide the optimum speed and performance under average conditions of load. Propeller selection must be based on the ability of the engine to turn the propeller and achieve the manufacturer's recommended RPM at full throttle.

NOTE

Variations from average loadings, bottom condition and/or engine condition could call for a propeller change to achieve the performance desired.



SELECTING A PROPELLER - INBOARDS

CAUTION

Improper propeller selection and installation could result in loss of the propeller, and/or excessive stresses on the power train leading to power train failure. Cruisers Yachts recommends that you consult with, and employ the skills of your Cruiser Yachts Dealer when contemplating a propeller change.

WARNING

Dual engine installations normally include a standard rotation engine and a counter-rotation engine. If you remove the propellers, make sure the propeller is correct for the rotation of the engine before operating the yacht. Always follow the instructions in the stern drive owner's manual in the Skipper's Kit when removing, replacing and selecting a propeller.

First, ensure that the diameter and pitch provide the desired performance. The engine RPM at full throttle should be in the upper half of the recommended full throttle operating range. If RPMs are low, a propeller with a smaller pitch will increase RPMs. If RPMs are high, a propeller with an increased pitch will lower RPMs.

Second, ensure that the propeller rotation is consistent with engine and gear box rotation. Your yacht is designed with counterrotating inboards for minimum torque effects.

Third, ensure that the installation provides adequate safety features such as a straight key, a propeller nut, a jam nut and a cotter pin.

SELECTING A PROPELLER - IPS

CAUTION

Improper propeller selection and installation could result in loss of the propellers, and/or excessive stresses on the IPS leading to IPS and engine failure. Cruisers Yachts recommends that you consult with, and employ the skills of your Cruiser Yachts Dealer when contemplating a propeller change.

WARNING

Engine installations include a combination of standard rotation and counter-rotation engine propellers. If you remove the propellers, make sure the propellers are reinstalled correctly before operating the yacht. Always follow the instructions in the IPS owner's manual in the Skipper's Kit when removing, replacing and selecting a propeller.

First, ensure that the diameter and pitch provide the desired performance. The engine RPM at full throttle should be in the upper half of the recommended full throttle operating range. If RPMs are low, a propeller with a smaller pitch will increase RPMs. If RPMs are high, a propeller with an increased pitch will lower RPMs.

Second, ensure that the installation provides adequate safety features and all components are used. Refer to the IPS owner's manual in the Skipper's Kit for general maintenance and removal, and installation instructions.



FUEL SYSTEM (CROSSOVER VALVE)

Your yacht is equipped with an internal fuel system meeting current federal requirements. The best materials and components available are used to assemble the fuel system.

The fuel tank outlets to the engines have a manual valve for fuel shut-off in the event of a line break. To access the manual valves or tank fittings, open the fuel access hatch. The valves are on the top of the fuel tank. These valves are attached to the fuel tank outlet and return lines. The valves are closed when the handle is perpendicular to the fuel line, and open when the handle is in-line with the fuel line.

There are also crossover valves between the tanks located at the top of the fuel tanks under the fuel access hatch.

Fuel fill caps are located on starboard deck walk-around of the yacht. Near the fill cap is a vent which allows air to move in and out of the tank as the fuel level changes. The fill for the starboard tank is forward and the port fill is aft.

The manual valves can control the fuel supply to the engines in five ways:

1. Both handles pointing aft shuts the flow of fuel OFF.
2. When both handles point forward each engine can receive fuel from its respective tank; the port engine receives fuel from the port fuel tank and the starboard engine receives fuel from the starboard tank.
3. When both handles point outboard, both engines receive fuel from both tanks.
4. With the port handle pointing aft and the starboard handle pointing outboard, both engines receive fuel from the starboard tank.
5. With the port handle pointing outboard and the starboard handle pointing aft, both engines receive fuel from the port tank.

WARNING

Inspect the entire fuel system regularly. Leaking fuel and fumes are a fire and explosion hazard that can explode causing injury or death.

All fuel system components must be checked before each boating season and regularly during the season for any leaks or bad hose conditions. Make sure the fuel system is leak free.

STEERING SYSTEM

WARNING

DO NOT operate your yacht if you suspect a problem with the steering system. Have your Cruiser Yacht Dealer inspect the steering system immediately if you suspect a problem. Operating the yacht with a malfunction steering system could cause injury or death.

Inboard-Equipped Yachts - Your yacht is equipped with hydraulic steering. The rotation of the steering wheel results in an unbalanced hydraulic (oil) pressure in the two lines going from the helm to the rudder cylinder. The pressure differential is converted to linear motion by the hydraulic steering cylinder which is mechanically linked to the rudder tiller arms. Both rudder tiller arms are rigidly connected together by a tie bar so that both rudders respond equally to the helm.

IPS-Equipped Yachts - The steering system on IPS-equipped yachts is integrated with the engine and propulsion system.



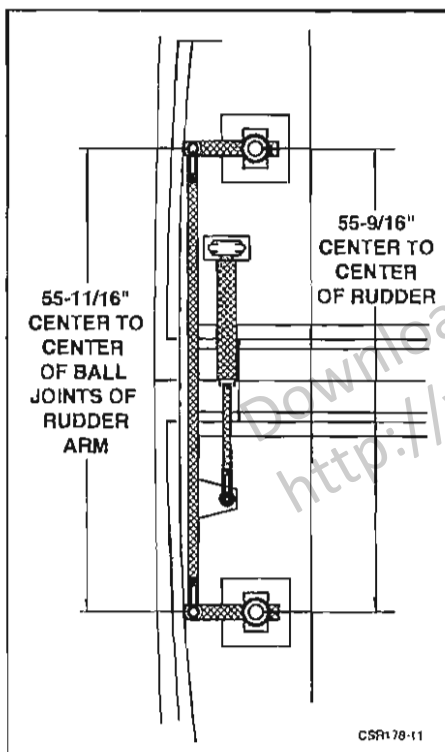
Section 4

Steering Wheel

The steering wheel uses the assistance of power steering to permit turning of the steering wheel with a minimum of effort. It is important that you know how your yacht operates, and are aware of its limitations.

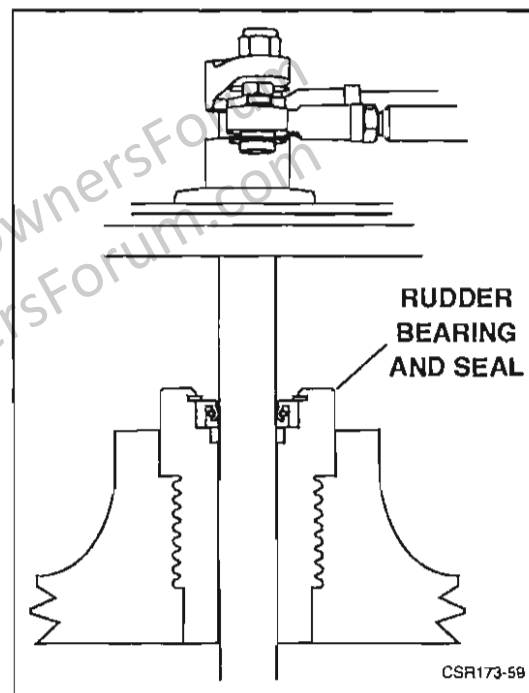
Rudder - Inboards

The twin rudders are offset from the shaft centerline to allow shaft removal without having to remove the rudders. Each rudder is also canted inboard slightly to allow for a constant pressure of water to act upon the rudder face. The pressure on the rudder face prevents "flutter" in a 0° rudder position.



CAUTION

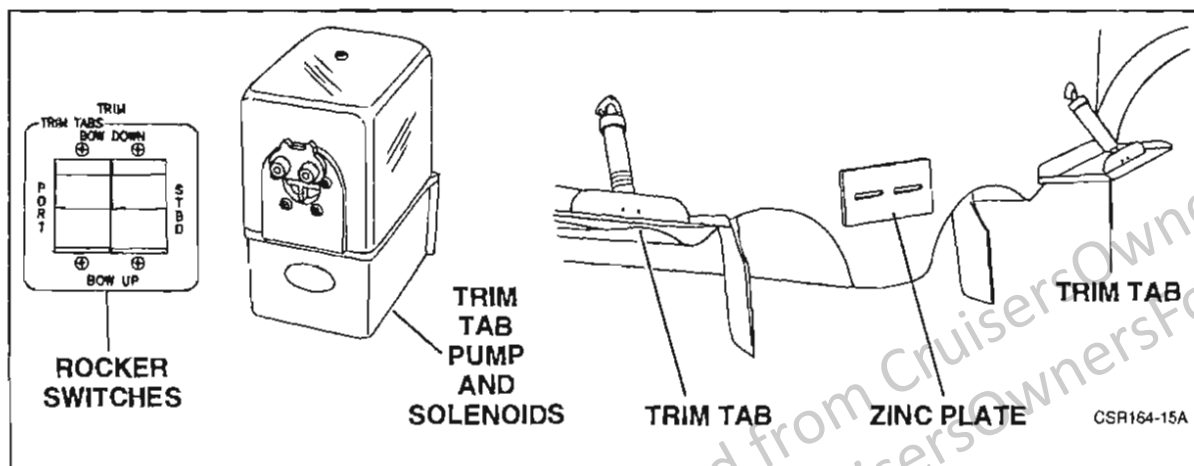
The carrier seal should be inspected regularly for excessive water entry. If left unattended, excessive water entry could result in the submergence of the engine compartment, or of the entire yacht. Cruisers Yachts will not warrant damage incurred due to an improperly adjusted packing nut.





TRIM TABS

The trim tab system is an electro-hydraulic system. Two rocker switches, marked port and starboard, control a hydraulic pump and solenoids. The pump sends hydraulic oil to hydraulic actuators (cylinders) which lower the trim tabs. To raise the trim tabs, the rocker switch is moved which allows oil to flow from the actuator to the pump.





Section 4

ELECTRICAL SYSTEM

Your yacht is equipped with two electrical systems: a battery powered direct current (DC) system and a generator or shore powered alternating current (AC) system. Both systems are controlled from the AC/DC master panel.

The DC system supplies power to all of the yacht's 12V electrical circuits (lights, pumps, blowers, ignition, etc.).

The AC system supplies power to the 120/240 volt systems when the yacht is moored at the dock or slip, or when the generator is running.



A glowing red polarity light indicates reversed polarity electrical shock hazard exists and damage to appliances will occur. DO NOT use shore power while red light is ON. Disconnect the shore cord and have the shore outlet serviced by a qualified electrician before using.

DC Electrical System



Considerable care has been taken to design a safe electrical system to protect you from hazardous shocks. Any modifications to the system should always be done by an authorized Cruisers Yachts Dealer not only to protect your warranty, but to protect you from hazardous shock.

Your yacht has a 12 volt DC house system. The positive wire is hot, and feeds current from the batteries to the various 12 volt systems and the negative wire is the ground.

Some yacht and engine options may be equipped with up to five batteries. There is a cranking battery for each engine or can be two batteries in parallel for 12 volt house power, a generator battery and an optional bow thruster battery. Not all yachts offer this as an option.

When the engines are running, all batteries are charged by the alternators. There is a battery charger for the house and cranking batteries. The battery chargers are powered by either the dockside or generator 120V AC power. The generator battery is charged by the generator.

The DC system wires are identified by three colors. Red wires are +12 volts, yellow wires are DC common and gray wires are DC control wires. Bonding wires are green. AC system wires utilize three colors. White wires are AC neutral. Black wires are AC hot wires in 120V AC systems. Black and red wires are the ungrounded wires in 240V AC power systems.

Individual harness wires are identified with wire number and function by lettering which is printed by an ink jet printer every three inches on the wires. This information aids in identifying wire functions for troubleshooting. Battery cables are identified by labels on both ends of each cable.

A bonding wire is extended through a #6 green wire from the bonding strip to a terminal behind the instrument panel. This will facilitate electronics installation. In addition, the handrails are attached to the bonding system.

All batteries are isolated from each other by a battery isolator. When the engines and ignition switches are OFF the isolator prevents house battery loads from discharging the cranking batteries. When the batteries are being charged by the alternators, the isolator automatically isolates the batteries and will distribute the charge among the batteries according to individual need.



DC Master Panel

The DC master panel consists of a voltmeter, ammeter, a battery test switch, a series of switch type and resettable circuit breakers, a generator start switch, and the DC main circuit breaker.

The meter is a convenience feature which allows you to check on the condition of the three batteries. With master breaker switch in OFF position, turn battery test switch to:

- STBD - to check the starboard engine cranking battery
- PORT - to check the port engine cranking battery
- GENERATOR - to check the generator cranking battery
- HOUSE - to check the house batteries and
- OFF - to disable meter and test circuit

CAUTION

DO NOT reset a breaker which has been automatically tripped without first discovering and remedying the cause of the problem.

The switch type circuit breakers' function allows you to manually enable or interrupt a circuit by moving the switch on or off, and they protect the system receiving the DC power by automatically opening the circuit should a short or overload condition occur.

The resettable circuit breakers protect the system receiving the DC power by automatically opening the circuit should a short or overload occur.

OPERATION OF DC SYSTEMS

Read through the table on the following page(s) to familiarize yourself with the DC systems on your yacht.

DANGER

A glowing red polarity light indicates a reversed polarity electrical shock hazard exists and damage to appliances will occur. DO NOT use shore power while red light is ON. Disconnect the shore cord and have the shore outlet serviced by a qualified electrician before using.

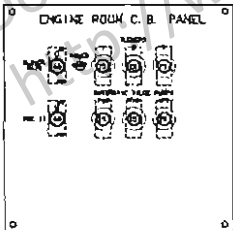
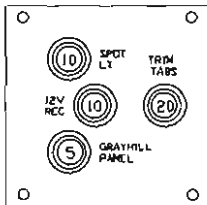
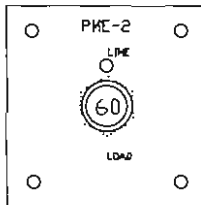


Section 4

DC Panel Circuit Breaker Functions

| DC Circuit Breaker | Function |
|--|---|
| DC MAIN | <p>Put the breaker in the ON position to connect power to rest of the circuit breakers on the panel except the bilge pumps and the CO detectors. The automatic bilge pump circuit breakers are mounted on the AUTOMATIC BILGE PUMP C.B. PANEL located in the engine room. If any of the breakers are tripped, the white button popped out, reset them immediately. The STEREO MEM, SHOWER SUMPS and CO DETECTORS circuit breakers are connected to +12V DC, which is switched ON and OFF at the house battery switch. The CO DETECTORS and SHOWER SUMPS circuit breakers should be reset immediately if they are tripped.</p> <p>CAUTION: If the house battery switch is OFF, the CO detectors are NOT ACTIVE. There is no CO detector warning if the house battery switch is OFF.</p> |
| LIGHTS FSR | Put the circuit breaker in the ON position to connect power to the forward stateroom light switches. |
| LIGHTS MSR | Put the circuit breaker in the ON position to connect power to the master stateroom light switches. |
| LIGHTS COCKPIT | Put the breaker in the ON position to connect power to the cockpit light switches. |
| LIGHTS AFT | Put the breaker in the ON position to connect power to the aft head light switch. |
| LIGHTS FWD | Put the breaker in the ON position to connect power to the forward head light switch. |
| PUMP FWD HEAD, PUMP AFT HEAD | Put the breakers in the ON position to connect power to the head pumps. Power to the pumps must be ON or the electrically controlled VacuFlush heads will not flush. |
| SPARE/SHORE POWER RETRACT (OPTIONAL) | Put the breaker in the ON position to connect power to the dockside retract motor, if equipped. The motor can be controlled to extend or retract the dockside cable by either a remote control or by switches mounted under a step near the entrance of the cable to the yacht. |
| FRESH WATER PUMP | Put the breaker in the ON position to turn on the fresh water pump and the fresh water tank gauge. The pump will turn on automatically when a fresh water demand is actuated, i.e. opening a faucet, and will run at the speed required to maintain water flow. |
| SPARE/CPT WASH DOWN | Put the breaker in the ON position to turn on the cockpit wash down pump, if equipped. |
| SPARE/FWD MACERATOR | Put the breaker in the ON position to turn on the forward macerator, if equipped. |
| SPARE/AFT MACERATOR | Put the breaker in the ON position to turn on the aft macerator, if equipped. |
| SPARE | This breaker is a spare for future use. |
| LIGHTS MID CABIN | Put the breaker in the ON position to connect power to the mid cabin light switches. |
| LIGHTS GALLEY | Put the breaker in the ON position to connect power to the galley light switches. |
| REFRIGERATOR | Put the breaker in the ON position to connect power to the refrigerator. |



| DC Circuit Breaker | Function |
|--|--|
| SPARE | This breaker is a spare for future use. |
| STEREO/TV AMP | Put the breaker in the ON position to connect power to the stereo and the TV antenna amplifier. |
| BLOWER | This switch controls the engine room blowers. Switch the blowers on for at least four minutes prior to starting the engines or generator to rid the engine room of fumes. |
| PMES/STEREO MEM/ SHOWER SUMPS/ C.O. DETECTORS | These circuit breakers are not switchable. If an overload trips the breaker, determine the cause of the overload, clear the fault and push the breaker reset button to reset it. |
| PMES | This circuit breaker connects power to solenoids PME-1 and PME-2 which feed power to the two control circuit PMEs (Power Management Enclosures) in the Grayhill control system, PME-1 and PME-2 have outputs that are controlled by the keypad mounted at the helm. |
| CO MONITORS | This breaker connects power to the CO detectors. The breaker is connected to the +12 volts house battery switch, bypassing the DC MAIN circuit breaker for continuous CO detection. Reset this breaker immediately if it is tripped. |
| SHOWER SUMP | This breaker connects power to the shower sump pumps for automatic pump operation. The shower sump pumps are turned on by float switches when the water level causes the float switches to rise. In addition to the showers, air conditioners and sinks drain into the sumps, requiring continuous automatic operation. |
| STEREO MEMORY | This breaker connects power to the stereo memory. |
| GENERATOR | Push the START switch until you hear that the generator has started, then release the switch. To stop push the STOP switch and hold it in until the generator stops. |
| AUXILIARY ENGINE CONTROL | These switches are used to start and stop the engines in the event that the keypad is not used for these functions. In normal operation the keys should be removed and the engine start/stop functions controlled from the keypad. |
| ADDITIONAL CIRCUIT BREAKER PANELS | <p>There are three additional circuit breaker panels located in the yacht for localized functions. The panel locations and functions are shown.</p> <div style="display: flex; justify-content: space-around; align-items: flex-end;"> <div style="text-align: center;">  <p>ENGINE ROOM C.B. PANEL</p> <p>LOCATED ON THE FORWARD BULKHEAD IN THE ENGINE ROOM</p> </div> <div style="text-align: center;">  <p>PANEL LOCATED BELOW THE DASH</p> </div> <div style="text-align: center;">  <p>PME-2</p> <p>LOCATED ADJACENT TO AC/DC PANEL</p> </div> </div> <p>35-E0018-Manual</p> |



Section 4

AC Electrical System

WARNING

Considerable care has been taken to design a safe electrical system to protect you from hazardous shocks. Any modifications to the system should always be done by an authorized Cruisers Yachts Dealer not only to protect your warranty, but to protect you from hazardous shock.

AC POWER

The standard AC electrical system in the **420 Express Series** is wired for 120/240 volts AC, 50 amps, single phase, 60 hertz power. This allows the system to have two lines, L1 and L2, at 120V AC and also 240V AC. The neutral (white) conductor is connected to shore grounded neutral. The yacht ground (green wire) is connected to the dockside ground via a galvanic isolator. The galvanic isolator reduces galvanic corrosion due to stray low voltage DC currents between the yacht ground and the dockside earth ground.

An optional AC system for non US power is wired for 220 volt, 32 amp, 50 hertz power.

AC Master Panel

United States Version

120/240V AC, 50 amp, 60 hertz single phase is the standard power system. An onboard generator will furnish 120/240V AC single phase power.

International Version

220V AC, 32 amp, 50 hertz single phase is the optional international power system. An onboard generator will furnish 220V AC 50 hertz power.

The load center can receive power from dockside or the generator. For dockside power, move the slide protector over the generator breaker and turn on the dockside breaker. For generator power, move the slide protector over the dockside breaker and turn on the generator breaker.

CAUTION

DO NOT reset a breaker which has been automatically tripped, without first discovering and remedying the cause of the problem.

The circuit breakers' function is twofold; they allow you to manually enable or interrupt a circuit by flipping the switch on or off, and they also protect the system receiving the AC load by automatically breaking the circuit in cases of shorts or overloads.

GENERATOR

IMPORTANT

Read the generator owner's manual contained in the Skipper's Kit before operating the generator for the first time. The manual contains important operation and maintenance information.

The generator may be started from the engine batteries unless your yacht is equipped with a separate battery for the generator only.

To start the generator, hold generator switch in the START position until you hear the generator has started, then release switch. The switch will automatically return to the RUN position and AC power is applied to the load center or centers selected.

Turn generator OFF position by placing the generator switch in the STOP position.

The power transfer slide protector prevents accidental use of shore power and generator power at the same time. Slide protector positioning is discussed under OPERATION OF AC SYSTEMS.



OPERATION OF AC SYSTEMS

Connecting Shore Power Cable:

1. Make sure the shore dockside breaker, the yacht main dockside breaker and the yacht AC/DC panel DOCKSIDE breakers are in the OFF position.
2. Connect the shore power cable to the yacht receptacle and then connect the shore power cable to the dockside power source.
3. Be sure the DC MAIN circuit breaker is OFF and any 120V AC or 240V AC that should not receive power immediately are switched OFF. If the indicator lights are normal, then the DOCKSIDE 240/120V AC circuit breaker may be switched on. AC and DC circuit breakers may then be switched ON as needed.

CAUTION

DO NOT turn the DOCKSIDE 240/120V AC breaker on if the REVERSED POLARITY light is ON. Severe damage to the electrical system could result. Disconnect the cable and have the fault corrected by a qualified electrician.

4. Switch the shore dockside breaker to ON position. Switch the yacht dockside power breaker to ON position. Then check the AC/DC panel POWER SOURCE AVAILABLE indicator lights. The 120V AC LINE 1, V AC DOCKSIDE and 120V AC LINE 2 indicator lights should be ON position. The REVERSED POLARITY light should be OFF position.

Disconnecting Shore Dockside Power:

Switch the yacht DOCKSIDE 240/120V AC circuit breaker OFF. Switch the yacht dockside power circuit breaker OFF. Switch the shore dockside power circuit breaker OFF. Then the dockside power cable may be disconnected.



Section 4

AC Panel Circuit Breaker Functions

When the AC panel is receiving power the following circuit breakers can be switched ON. Refer to the INTERIOR GENERAL LAYOUT, COCKPIT LIGHT PLAN LAYOUT and the INTERIOR LIGHT PLAN LAYOUT in **Section 2** for location details.

| 120V AC CIRCUIT BREAKER FUNCTIONS | |
|-------------------------------------|--|
| AC Circuit Breaker | Function |
| BATTERY CHARGER | Switch the breaker ON to connect 120V AC to the battery charger. This 12V DC battery charger charges the engine cranking batteries and the house batteries. These batteries are also charged by the engine alternators when the engines are running. |
| MICROWAVE | Switch the breaker ON to connect power to the microwave oven. The oven is controlled by its front panel controls. Refer to the Skipper's Kit for detailed oven operating instructions. |
| OUTLETS PORT | Switch the breaker ON to connect power to the salon port 120V AC outlet and the outlet in the forward stateroom. |
| OUTLETS GALLEY | Switch the breaker ON to connect power to the galley GFCI outlets. |
| OUTLETS COCKPIT | Switch the breaker ON to connect power to the cockpit 120V AC GFCI outlet. |
| SPARE/BOW THRUST BAT CHARGER | Switch the breaker ON to connect power to the optional bow thruster battery charger, if equipped. |
| SPARE/WASHER DRYER | Switch the breaker ON to connect power to the optional washer and dryer, if equipped. |
| SPARE/P&S ENG HTRS | Switch the breaker ON to connect power to the optional engine heaters, if equipped. IMPORTANT! Refer to the engine heater instructions in the Skipper's Kit for proper operation of the engine heaters. The heaters or engines could be damaged if the heaters are not operated as detailed in the engine heater manual. |
| SPARE/WATER HEATER/HEATERS | Switch the breaker ON to connect power to the optional water heater(s), if equipped. Refer water heater instructions in the Skipper's Kit for proper operation. |
| REFRIGERATOR | Switch the breaker ON to connect power to the refrigerator. Refer to the Skipper's Kit for refrigerator operation instructions. |
| ICE/REFRIGERATOR | Switch the breaker ON to connect power to the cockpit ice maker/refrigerator. |
| RANGE | Switch the breaker ON to connect power to the galley range. |
| OUTLETS STBD | Switch the breaker ON to connect power to the salon starboard dinette 120V AC outlets, the forward head GFCI outlet and the forward stateroom starboard outlet. |
| OUTLETS MID | Switch the breaker ON to connect power to the mid cabin 120V AC outlets. |



120V AC CIRCUIT BREAKER FUNCTIONS

| AC Circuit Breaker | Function |
|--------------------|---|
| OUTLETS AFT | Switch the breaker ON to connect power to the port aft stateroom GFCI outlet and the other aft stateroom outlets. |
| SPARE/CENTRAL VAC | Switch the breaker ON to connect power to the central vacuum cleaner system, if equipped. |
| SPARE/OVEN | Switch the breaker ON to connect power to the optional convection oven, if equipped. |

240V AC CIRCUIT BREAKER FUNCTIONS

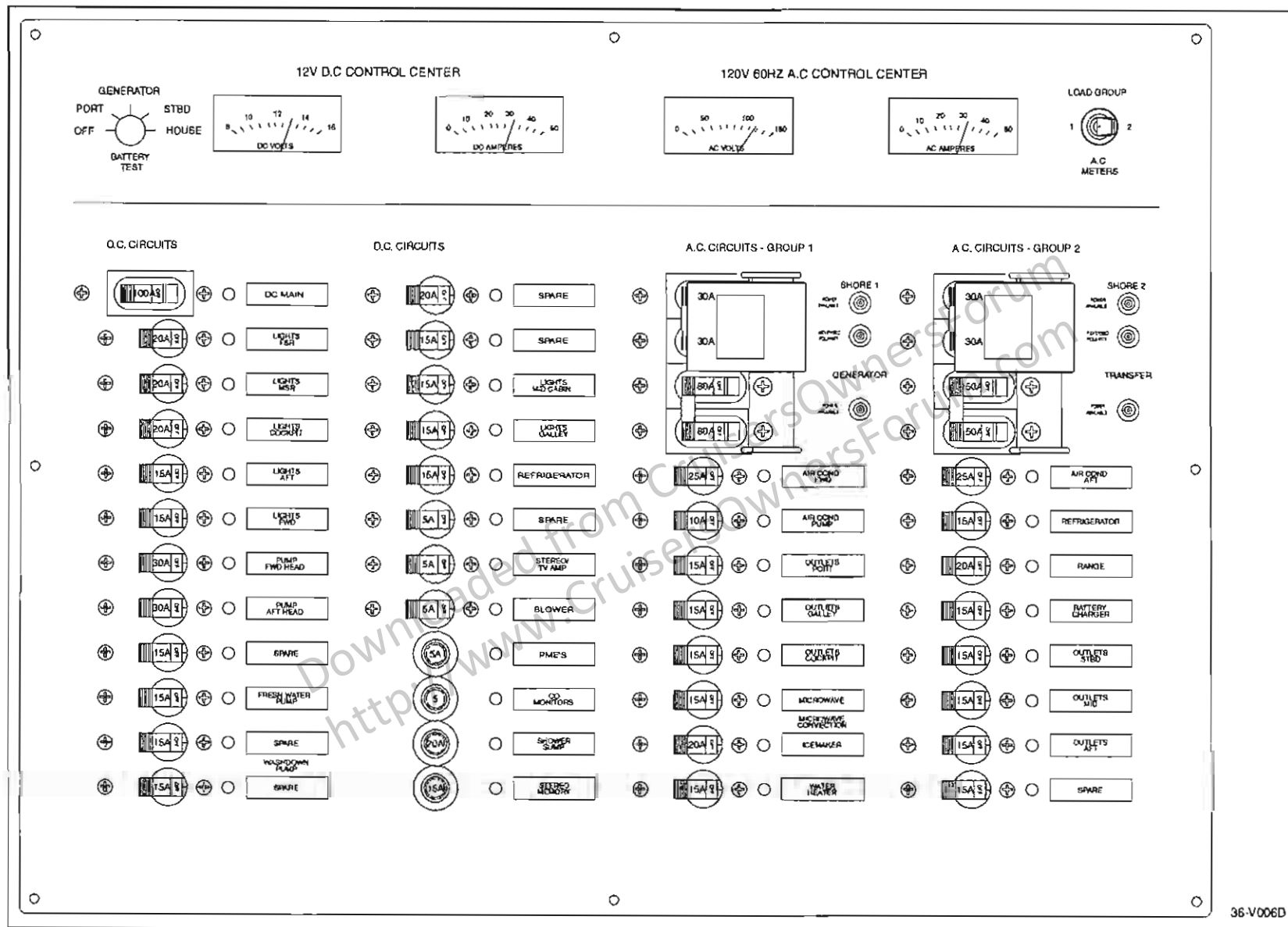
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|----------------------------|---|
| AC/HEATER | Switch the breaker ON to connect power to the salon air conditioner/heater. |
| AC/HEATER | Switch the breaker ON to connect power to the aft stateroom air conditioner/heater. |
| AC WATER PUMP | Switch the breaker ON to connect power to the air conditioner water pump. The pump must be switched ON when either or both air conditioners are ON. |
| SPARE/AC/HEATER CPT | Switch the breaker ON to turn on the air conditioner/heater, if equipped. |
| SPARE/WATER HEATER/HEATERS | Switch the breaker ON to turn on both water heaters, if equipped. |

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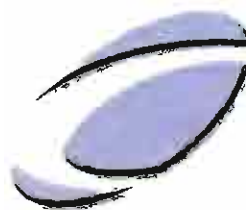


Section 4

US Std's



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A DIVISION OF KCS INTERNATIONAL, INC. LIMITED WARRANTY

REGISTRATION OF PURCHASE: The "Federal Boat Safety Act of 1971" requires all boat manufacturers to maintain a record of all first retail purchasers and their current address for the purpose of notification in case of defective parts or equipment, or in case of non-compliance with standards or regulations set forth by this act. Failure to complete and return your factory warranty card for our records will waive your right to notification of defect and/or repair at manufacturer's expense. **THIS LIMITED WARRANTY CAN BE ACTIVATED ONLY BY SUBMITTING THE "LIMITED WARRANTY REGISTRATION CARD" TO CRUISERS YACHTS WITHIN THIRTY (30) DAYS OF THE DATE OF PURCHASE.**

WARRANTY COVERAGE: CRUISERS YACHTS, a division of KCS INTERNATIONAL, INC., warrants to you, Consumer, subject to the limitations and exclusions described below, that those parts of the new boat manufactured by CRUISERS YACHTS, and purchased from an authorized Cruisers Yachts dealer, are free from defects in material and workmanship under normal use and service. The duration of this warranty is as follows: (1) The structural sections of the hull and deck for a period of 5 years beginning the date of delivery to the first consumer. (2) As the other parts and components manufactured by CRUISERS YACHTS for a period of 1 year beginning the date of delivery (except for exclusions listed below). (3) CRUISERS YACHTS warrants the gelcoat finish below the waterline against blistering for a period of (3) three years from the date of sale, provided that the boat is maintained annually and records are forwarded to the Cruisers Yachts Service Department annually.

WARRANTY CLAIM PROCEDURES: If a defect is discovered during the applicable warranty period, Consumer must promptly notify the selling dealer (or CRUISERS YACHTS) of such in writing. In no event shall such notification be received by the dealer (or CRUISERS YACHTS) later than 30 days of the discovery of the defect. All warranty claims must first be made to the dealer from whom the boat was purchased. The dealer will contact CRUISERS YACHTS, who at that time will determine whether the defect is covered by this limited warranty and advise the dealer. For warranty service the boat must be returned to the selling dealer or if determined by CRUISERS YACHTS to our factory. A boat may not be returned to the factory unless prior written authorization, in accordance with instructions set forth in CRUISERS YACHTS return authorization, from CRUISERS YACHTS SERVICE MANAGER. Transportation, preparation, disassembly and reassembly cost to and from the dealer or CRUISERS YACHTS will be the responsibility of the owner.

REMEDY: Within a reasonable time after notification, CRUISERS YACHTS will repair any defect in materials or workmanship or at its option, correct such defect by replacing nonconforming goods or parts. Such repair and/or new parts are warranted for the unexpired portion of the original warranty, or for 90 days, whichever is longer. Warranty work (parts and/or labor) shall be at CRUISERS YACHTS expense. These remedies are the Consumers exclusive remedies for breach of warranty.

LIMITATION AND EXCLUSIONS: This warranty applies only if the boat is used under noncommercial normal use and service, and shall not apply to the following: (1) Boats subjected to negligence, abuse, misuse, or accident. (2) Boats subjected to improper operation, trailering, maintenance or storage, commercial use or use for purposes other than those for which the boat was designed. (3) Defects or damages caused by a force or impact which exceeds design specifications, including but not limited to, exposure to harmful solvents and electrolysis. (4) Defects or damages caused by unauthorized attachments or modifications. (5) Any statements, representations or warranties given by dealers or

third persons other than those provided within this warranty. (6) Any unit which is part of a rental fleet, used for racing or commercial purposes. (7) The following consequential damages: (a) loss of time, (b) inconvenience, (c) towing charges, (d) expenses for travel, lodging, telephone and fuel, (e) loss or damage to personal property or loss of revenue, (f) loss of use of the boat, (g) haul out, launch, lift charges. (8) This warranty specifically does not apply to engines, stern drives, IPS, transmission, generators, propellers, improper adjustment of controls, adjustment or realignment to any components including, but not limited to the drive train, and any other parts expressly warranted by the manufacturer thereof. (9) Also excluded are gelcoat crazing, gelcoat stress cracks, gelcoat fading, stainless steel hardware, windshields, glass breakage, all vinyl upholstery, cockpit seat wood, acrylic top enclosures, carpet, electronics, light bulbs, gauges and other equipment or accessories manufactured by manufacturers other than Cruisers Yachts, which are separately warranted by such other manufacturers (appropriate adjustments therefore being provided by their respective manufacturers). (10) Any published or announced catalog or performance characteristic of speed, fuel and oil consumptions and static or dynamic attitude in the water. (11) Cruisers Yachts shall not be effective or actionable if any repair or replacement work is performed by any unauthorized party. (12) Boats manufactured with Cruisers Yachts applied ablative bottom paint does require re-coating based on the region your boat is operated in. Re-coating is a responsibility of the owner.

THE FOREGOING WARRANTIES ARE EXCLUSIVE AND IN LIEU OF ALL OTHER EXPRESSED WARRANTIES, INCLUDING BUT NOT LIMITED TO THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE, DO NOT EXTEND BEYOND THE DURATION OF THE EXPRESS WARRANTIES PROVIDED HEREIN.

IN NO CASE SHALL CRUISERS YACHTS BE LIABLE FOR ANY SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES BASED UPON BREACH OF WARRANTY, BREACH OF CONTRACT, STRICT TORT, OR ANY OTHER LEGAL THEORY. THIS LIMITATION DOES NOT APPLY TO CLAIMS FOR PERSONAL INJURY.

SOME STATES DO NOT ALLOW THE EXCLUSION AS LIMITATION OR INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LIMITATIONS ON HOW LONG AN IMPLIED WARRANTY LASTS, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU.

TRANSFERABILITY: All rights and terms of this limited warranty may be transferred to new owners of the covered product by completing a **TRANSFER OF WARRANTY FORM** and submitting a written request to Cruisers Yachts and accompanied by a \$150.00 payment to Cruisers Yachts.

THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.

CRUISERS YACHTS reserves the right to improve its products through changes in design and/or material without being obligated to owners of boats of similar or the same model prior manufacture.

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